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MOTION PICTURES IN EDUCATION

A Summary of the Literature

MOTION PICTURES IN EDUCATION

A Summary of the Literature

Source Book for Teachers and Administrators

Compiled by
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of the
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FOREWORD

Motion Pictures in Education: A Summary of the Literature is the fourth of a series of publications issued under the direction of the Committee on Motion Pictures in Education of the American Council on Education. The first was the *National Visual Education Directory,* a survey of audio-visual equipment owned by elementary and secondary schools of the United States compiled by Mr. Cline M. Koon and Mr. Allen W. Noble of the United States Office of Education. The other two have been published as American Council on Education Studies. The one, *The Motion Picture in Education: Its Status and Its Needs,* is a Committee report of the work of the Educational Motion Picture Project of the Council and the major problems which remain unsolved. The other, *Teaching with Motion Pictures: A Handbook of Administrative Practice* by Mr. Edgar Dale and Mr. Lloyd L. Ramseyer of Ohio State University, is a handy reference for the teacher and administrator. It provides concrete answers to the most frequently raised questions relating to motion pictures and other visual aids.

The origin and development of *Motion Pictures in Education: A Summary of the Literature* is described in the introduction to this volume. For the generous gift of time and effort in directing this work and in synthesizing the materials appreciation is extended to Mr. Edgar Dale of Ohio State University, Miss Fannie W. Dunn of Teachers College, Columbia University, and Mr. Charles F. Hoban, Jr., of the American Council on Education. For the bibliographical compilation, digesting and editing of a large amount of the material contained in this volume appreciation is extended

to Miss Etta Schneider of Teachers College, Columbia University. The Committee on Motion Pictures in Education has been unfailing in its directive and advisory capacities in connection with the Educational Motion Picture Project. It comprises Mr. Ben G. Graham, *Chairman,* Mr. John E. Abbott, Mr. W. W. Charters, Mr. Frank N. Freeman, Mrs. Mary Langworthy, and Mr. Mark A. May.

George F. Zook
President

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INTRODUCTION

The growth of interest in the possibilities of using educational motion pictures has led to a realization of the need for an organized, selected bibliography which will help research workers, teachers, and administrators to evaluate what has been done, to consider what ought to be done, and to proceed to plan what might be done with this new educational medium.

The student of visual education, attempting to study what has been written, is confronted with a number of problems. First, bibliographies are inadequate. Second, in order to find what he is looking for he must thread his way among theses, pamphlets, mimeographed reports, monographs, magazine articles, and books. Third, he will face several difficulties in securing materials for examination, namely: college libraries do not usually maintain a complete set of educational journals; most of the theses are unpublished and difficult to obtain; and the number of books devoted to visual education is small. That this body of information should be assembled and coordinated for the use of workers in the field of visual instruction is obvious. Even a cursory study of the material indicates that it contains not only valuable records of personal experiences and significant generalizations, but a great many important factual data as well.

The digests here included are an attempt to provide one answer to this difficult problem. In this volume detailed summaries have been made of significant articles, theses, and books which have appeared during the past decade. They have been classified and assembled, moreover, with editorial comments to assist the reader in distinguishing the high lights of the available literature.

The authors, it should be added, have organized and interpreted the material in the light of the educative process as a whole, and the relationship of the motion picture to it. They have attempted to maintain a balanced view of the field. They are less concerned with promoting the use of the motion picture in education than they are with promoting its *effective use.*

The reader will be interested in knowing how these materials were selected. Under the direction of Professor Dunn and Miss Schneider a Works Progress Administration project at Teachers College was initiated in 1934 to compile a bibliography on the motion picture in education. After a few thousand titles had been assembled, the workers attempted to classify them under such categories as suggested themselves from the nature of the material. This led to such classifications as the Administration of Visual Aids, Teacher Preparation in Visual Education, Production of Motion Pictures in Schools, Teaching Techniques, and the like.

The American Council on Education, through its project on the educational film, subsequently expressed a desire to assist in making this bibliography generally available. It was decided that the most useful form which this bibliography might assume would be a series of selected digests of the more important references. An experimental series of digests in the fields of "Administration of Visual Aids" and "Teacher Preparation in Visual Education," respectively, were published and distributed to workers in visual education in various parts of the country.

These experimental volumes were mimeographed—250 copies of the section on "Administration," and 400 copies of that on "Teacher Preparation"—and submitted to leaders in the field for criticism. The bulletin on "Administration of Visual Aids" was accompanied by the following questions:

1. Have the authors missed important materials dealing with the administration of visual aids? If so, what are they?

2. Are these digests adequate? If not, how may they be improved?

3. Would the offering of, let us say, a quarterly digest and bibliographical service be a legitimate function of the proposed American Film Institute?

A similar questionnaire was sent with the "Teacher Preparation" bulletin. Both these bulletins are now out of print.

The suggestions received from this source were utilized in rewriting these two experimental volumes, which now form two chapters of this book. The suggestions were also used in preparing the additional sections of the book.

The distribution of chapters for abstracting was based on the past experience of the workers who cooperated. Dr. Hoban was qualified to treat the sections on Research and on Criteria for Evaluation because of the intensive study he had made in connection with his Ph.D. dissertation.[1] Dr. Dale has for some time been actively interested in promoting school production of motion pictures, making him the logical consultant for the section dealing with that topic. Professor Dunn and Miss Schneider are interested in all aspects of the field, and agreed to report on the remaining topics. Dr. Dale assisted in editing and assembling the entire book.

The plan followed in selecting articles for inclusion in the series of abstracts was as follows: First, the titles of the articles contained in the bibliography were mimeographed and sent to leaders in the field of visual education. These persons were asked to check those articles which they considered important enough to be summarized in detail, and to add others. This procedure was followed for the sections on "Administration" and "Teacher Preparation."

Next, digests were written experimentally by several competent persons to get a consensus of what should be

[1] Hoban, Charles F., Jr. "A Critical Evaluation of the Experimental Literature on Instructional Films." Unpublished Ph.D. dissertation. Duke University. 1935.

included. No attempt was made by the reviewers to evaluate the conclusions stated in the various articles. They were constantly aware of the needs of the persons using these digests, and attempted to summarize the salient items of information which would be most useful.

This book has been developed under the sponsorship of the American Council on Education as one of the publications related to its project on Motion Pictures in Education. It is hoped that this volume will acquaint the reader with the significant literature in the field, and will present information necessary to those who wish to be intelligent about the contribution of the motion picture to education.

Special acknowledgment is made to the following persons for their valuable assistance in preparing these materials: Alene Little, Ohio State University; Lloyd L. Ramseyer, Ohio State University; Elias Katz, New York City; and Hazel Gibbony, Ohio State University. Acknowledgment is also made to the publishers for permission to summarize articles from their periodicals.

The bibliography upon which this publication is based was developed under the Works Progress Administration Project 65-97-295, Sub-Project 23.

SEPTEMBER 30, 1937

Part One

THE ADMINISTRATION OF VISUAL AIDS

COMPILED BY

FANNIE W. DUNN
ETTA SCHNEIDER

THE ADMINISTRATION OF VISUAL AIDS

Introduction

Administration of visual aids has both mechanical and educational aspects. It is concerned on the one hand with the organization of materials from the standpoint of assembly, classification, care, physical production, and distribution; and, on the other, with their integration into the educational program, through courses of study and the development of teaching techniques by means of teacher training, supervision, and experimentation. Both aspects have the common purpose of providing conditions favorable to effective teaching, and thereby improving the quality of education afforded by the school.

First steps in the utilization of visual aids are most often toward the provision of the physical materials—pictures, prints, slides, films, and projection machines—and such organization of these as facilitates their ready availability for teachers' use. These steps are frequently, if not usually, taken on the initiative of an individual teacher or principal, who out of his own active interest gradually develops the interest of a self-constituted committee or of the administrative office.[1]

Useful beginnings can be made with materials which call for practically no budgetary provision. Such, for example, are lists of "vicinities and specific places for field study and excursions to gain acquaintance with living things in their natural habitats";[2] collections of still pictures, speci-

[1] Emery, James N. "Visual Instruction in a Small City System."
[2] Hollinger, John A. "Organization and Distribution of Visual Materials."

mens, and models;[3] or bulletins of information as to sources of free or inexpensive visual materials.

Such beginnings soon expand. Surveys of community resources are made for sources of materials; children and school patrons are interested in the exploration; ideas and information are interchanged through exhibits and other forms of publicity. Collection is supplemented by construction, by loan, and by exchange. Out of this almost inevitably some financial support eventuates, and materials are purchased through the efforts of children and teachers, through parent-teacher groups, or through the board of education.[4]

Materials and equipment most often purchased include maps, globes, slides, still films, stereographs, stereoscopes, stereopticons, and opaque projectors.[5] The nature of aids, as reported in the same study, varies according to the size of the school. Smaller schools use mounted and unmounted pictures more frequently; larger schools are apparently better equipped for projection, slides being second only to maps in types of aids most often reported by them, whereas they are eighth in frequency of mention in small schools. A more recent inclusion is the motion-picture projector, first silent and more recently sound, and provision for access to films.

When interest in the provision of visual materials extends beyond a single teacher, or at most a single school, some change becomes necessary, since it is no more economical to duplicate all items for every classroom than would be the case with books. Some flexibility is inevitably sacrificed in the course of the systematization that is involved, and the degree of inflexibility is likely to increase with the size of the system. A less ambitious program, making use of materials so inexpensive that each classroom and each school shall have its permanent supply, may in some cases contribute

[3] Campbell, Laurence R. "A Five Year Program."

[4] Southall, Maycie. "Supervisor's Relation to Improvement of Materials of Instruction."

[5] N.E.A. Research Division. "A Survey of the Use of Teaching Aids."

more to effective instruction than the machinelike regularity with which certain forms of equipment circulate in some cities.[6] This is, however, no more true and inevitable than is the case with the library. Adequate provision and effective organization of materials will make certain types available in each classroom, as is now the case in most schools with respect to maps, globes, and textbooks, and in many with respect to supplementary texts, classroom libraries, and school libraries. Materials less frequently or generally needed will be centered in museums or distributing bureaus of reasonable accessibility.[7] Careful selection will eliminate wasteful expenditure, and organization with relation to curriculum will greatly multiply fruitful use of available provision.

A whole series of important problems is here involved. What is to be the basis of selection, and who is to make the selection? How can curriculum and materials be interrelated so as to be mutually beneficial and contribute most to the educational objectives of the school? What agencies can most economically and effectively render the services needed? How can the service be most efficiently organized? What shall be the unit of administration? What proportion of the budget is to be assigned to the maintenance of the service? These are the problems of the administration of visual aids with which the articles summarized in this compilation are concerned.

A fundamental consideration is the relation of visual materials to the educational program. Some enthusiasts would go so far as to regard visual work as a definite subject of instruction with an allotted period on the program of every classroom as strictly observed as periods of any subject in the curriculum.[8] The opposite position is that the use

[6] Knowlton, D. C. "Problems of Administration of Visual Instruction."
[7] Enlow, E. R. "Some Tentative Standards for City Visual Education Programs."
[8] Chambers, Elsie I. "Are You Interested in Visual Education?"

of visual materials constitutes a method of instruction applicable to practically all fields.[9] Is it a method of fundamental importance, on a par with the use of books, or is it merely supplementary to the real work of the school?[9] Have visual materials a clear-cut purpose in the educational program,[10] or are they mainly of entertainment and at best of vague and general educational value?[9] What is their value in counteracting handicaps imposed by large enrollments and crowded classrooms,[11] more expeditious imparting of desired information,[12-13] cutting down the number of repeaters or reducing truancy?[11] Is their more important service the contribution they make to sound understanding, through a degree of concreteness not possible with words alone,[13] so that in many respects and for many purposes they may be superior to the book as a means? Or are they rather to be regarded as a means of arousing intellectual interest which will lead to study of books?[13]

The foregoing values and purposes are not necessarily alternatives; in many cases they are coordinate or interrelated, but not in all. It is with respect to conflicting ideas among them that a clear position must be taken, if principles of selection and use are to be evolved. With respect to use, for example, are many pictures to be shown or may better results be obtained by intensive cumulative use of a few, carefully selected? One writer points out that the viewing of films may be very much like the experience of a party of tourists trailing an overzealous guide through a European art gallery.[14] Another warns against using too many pictures at one time lest the exercise become only a picture show.[15] These dangers exist because teachers lack a clear

[9] Strayer, George D. "Administration of Visual Education."
[10] Hollinger, John A. "Administration of Visual Aids in Education."
[11] Evans, Marian. "Budgeting for Visual Instruction."
[12] "Suggestions for a Motion Picture Exchange." *Volta Review.*
[13] Gregory, William M. "Visual Aids in the Classroom."
[14] Knowlton, D. C. "Problems of Administration, etc."
[15] Abrams, A. W. "Administration and Supervision of Visual Aids."

conviction of the educational, as opposed to the mere entertainment, purpose in the use of visual materials.

In the light of fundamental educational values, the numerous aspects of the administration of a program of visual aids must eventually be evolved. Some of the problems treated in the digests which follow are: selection of materials (Dorris, 26, Enlow, 43, Gregory, 31, Southall, 35, Whittinghill, 69); curriculum and visual materials (Dorris, 26, Evans, 25, Gregory, 31, McClusky, 32, Southall, 31, Strayer, 20, Reitze, 44, Campbell, 48, Angell, 49, Horning, 50, Gross, 84, Chambers, 85, Brunstetter, 29; equipment needed (Campbell, 48, Emery, 48, Reitze, 44, Enlow, 43); distribution of materials (Crakes, 46, Dorris, 26, Evans, 25, Hollinger, 76, McClusky, 34, Reitze, 45, Southall, 37, Strayer, 20); storage of materials in a central office (Dorris, 27, Evans, 25, McClusky, 34, Enlow, 43, Reitze, 44, Crakes, 46, Lain, 70, Gregory, 68, Haworth, 71, Hollinger, 24, Sigman 72); qualifications and administrative relationship of the director of visual education (Dorris, 27, Evans, 25, McClusky, 34, Reitze, 45, Whitcomb, 50, Whittinghill, 69); supervision, and in-service education of teachers (Abrams, 95, Dorris, 26, Brunstetter, 29, Evans, 25, Gregory, 68, Haworth, 71, Horning, 50, McClusky, 34, Reitze, 45, Roach, 73, Southall, 35, Strayer, 20, Whittinghill, 69); experimentation through the department of visual education (Gregory, 68, McClusky, 34, Reitze, 45, Strayer, 20, Whittinghill, 69); developing a program of visual education (Brunstetter, 29, Campbell, 48, Hester, 86, Hoek, 86, Smith, 83); costs and budget (Angell, 49, Crakes, 46, Emery, 48, Emery, 48, Evans, 25, Enlow, 43, Gregory, 68, Hollinger, 24, Reitze, 45); status and trends in administration (Division of Research of the N.R.A., 16, Southall, 35, Bard, 54); systems of filing and cataloging materials (87-91).

Out of many possible organizations, that selected for this compilation is, with the exception of the third section, on the

basis of units of administration. Articles dealing with city, state and national departments of visual education have been summarized in the order named.

I. Administration for a City

A. *The Establishment of a City System*

The articles by Strayer and McClusky, although written ten years ago, are still pertinent. In them is defined the relation of a visual-education department to other administrative departments in the city system. It is important that this relation be clearly perceived by the visual-education supervisor—both for the proper organization and administration of his department and to promote a spirit of cooperation.

Strayer, George D. (Institute of Educational Research, Teachers College, Columbia University) "The Administration of Visual Education." *School and Society.* 22:234-5. August 22, 1925. An abstract of an address delivered before the Section on Visual Education of the National Education Association, Indianapolis, June 30, 1925.

The administration of visual education must be considered in the light of the relation of visual education to the whole educational program. If, as many of us believe, visual aids should be provided for teachers in practically all fields, then the problem consists in the introduction of a method of instruction rather than in the actual administration of any unit of the school system. The director of visual education should work in cooperation with principals and supervisors, heads of departments in high schools, and individual teachers. He is essentially a staff worker who should be assigned, from time to time, to different parts of the school system so that he may aid in developing the use of visual materials in particular situations. He most certainly is not a line officer who is placed in control of some particular unit of the school system. His work in the school system is comparable to that of a director—a director of research, for example, or of the psychological clinic, or of the health service.

We need further investigation as to the most economical and efficient method of using pictures, slides, stereographs, and films. The method of distribution now found in many communities suggests that these visual aids are thought of as supple-

mentary to the real work of the school, rather than of the same fundamental importance as books. Some indication of our ultimate solution of this perplexing problem may be found in our organization of classroom and school libraries as opposed to a dependence upon a central library.

The director of visual education, in cooperation with specialists throughout the school system, must provide for the training of teachers in service. We cannot hope to achieve the results that are predicted through the use of visual materials without training teachers in this new technique. Our teachers' colleges and normal schools may be expected to include work in this field in their curricula, but for the teachers already in service it is essential that demonstrations of the efficient use of visual materials be provided and that courses of study be revised to include definite instruction to teachers in the use of these materials.

Since visual aids are used to improve instruction rather than to provide entertainment, the classification of pupils with respect to training and ability is essential. The herding of children into large auditoriums in order to exhibit a film that may have little or no relation to the work that most of them are doing, or the use of the stereopticon slide or stereograph merely to occupy time, has done much to delay the development of this most important technique in our public-school systems.

If we are to take visual education seriously, we shall have to think in terms of equipping every classroom with a proper electrical outlet for the portable stereopticon that we plan to use. We shall just as certainly need to build our auditoriums small enough [16] for a group of children of the same grade to work comfortably with the teacher in those subjects in which the slides or film offer an important aid to instruction. We shall have to provide space in the classroom, in the auditorium, and in the central storeroom, for the proper housing of the materials which are to be used.

Many other administrative problems wait upon more extensive investigations than have yet been undertaken. We must discover just how much it will cost to provide adequate visual aids for all subjects in which they can be used to advantage. We must discover how the courses of study in individual schools may be adjusted to allow for the use of particular materials at different periods during the year. We must learn to choose from

[16] This recommendation, made in 1925, was based on the necessity of a special booth for the 35 mm. projector, used exclusively at that time.—*Ed.*

among the visual aids that are now provided those that will bring the best results in each situation. We must learn to what extent we should vary the use of visual materials in relation to the intellectual capacities of different groups of children.

These are some of the issues that must be considered by the director of visual education. The compass of his inquiries and the validity of his findings will have much to do with the development of this important method in education.

McClusky, F. Dean. "Finding the Facts of Visual Education: The Administrative Status of Officers in Charge of Bureaus." *Educational Screen.* 4:72-6. February 1925.

The administration of visual education is a complex task. New devices complicate methods of instruction and require formulation of special techniques. The relation of departments of visual education to other phases of educational administration is a major factor to be considered. According to Hollis's study in 1924, the status of visual-education directors is not clearly defined. They are usually people already employed, who have been given additional assignments.

The director of visual education should not be a supervisor. To supervise personally all visual materials would call for more work than the director could handle and would cause friction between him and other supervisors. The administration of visual education should be in terms, not of devices, techniques, or methods, but of subject matter. There are supervisors of art and music, for example, but not of the lecture method or the laboratory method. A visual-education *supervisor,* therefore, would not fit into the administrative set-up, and would either exaggerate his position, or become a tool in the hands of other supervisors.

Among the functions suitable to a director of visual education are those of assisting in the organization of courses of study and, with other administrators, the collection of visual materials and their coordination with the course of study. The ultimate function of a city school department of visual education would be that of lending expert advice and assistance to teachers and principals; who would collect for their immediate and continued use those visual aids which they would keep permanently in their schools; and to secure in return the cooperation of all in collecting and distributing those materials which would supplement and enrich the materials in the possession of each indi-

vidual. Directors should define their own position by a spirit of intelligent cooperation.

Cooperation is difficult where the bureau is located in the state extension service. A state bureau may, however, prepare and collect materials for the use of small schools that would otherwise find it difficult to use visual aids. A state conference on visual education, such as those organized by the Universities of Missouri and Utah, would be very helpful, as would the distribution of bulletins of information.

Summary and conclusions.—A director of visual education should not be a supervisor comparable to those in music and art. He has the responsibility of seeing that all visual aids are coordinated through his office. This should be done in a cooperative spirit, not in a spirit of domination. He must check on what is being done in the line of visual education in all departments and know that it is being done properly. He can accomplish these ends by organization of visual-education conferences, correlation of visual aids with courses of study, establishment of a clearing house for information in his office, encouragement of experiments on the value and use of visual aids, and preparation of bulletins and circulars on techniques and methods.

Hollinger, John A. (Pittsburgh) "The Organization and Distribution of Visual Materials." *Educational Screen.* 5:147-50. March 1926.

A few outstanding methods of organization and distribution of visual materials are as follows:

1. Locate and announce vicinities and specific places for field study and excursions to gain acquaintance with living things in their natural habitats. Field study and excursions may be for (a) teachers and advanced students only, either because adults would be less likely to destroy property, or because such trips would make them more symapthetic with their surroundings, or (b) for classes of students in elementary, secondary, and higher schools. The classes must have specific purposes, and results should be carefully checked. These trips provide mental training, as well as subject-matter training.

Favorable localities and specific places can be located by state normal schools, museums and historical societies, industrial, commercial, and business concerns, or by specialized organizations,

such as the American Nature Society, State Game Commission, and so on.

Information for the use of the public schools should be submitted to designated centers from which it may be distributed to individual teachers. Such centers might be, for example, the U. S. Office of Education, the State Department of Public Instruction, offices of the county superintendents and city superintendents of schools, offices of supervising principals.

2. Create centers for the collection and distribution of materials that should be used as visual aids. There should be a *national* center for materials of national importance; a *state* center; and a center for *local* distribution—either a city visual-education center working closely with local museums, or a center in the extension divisions of normal schools or universities. Each individual school might also have a definite organization for the collection and distribution of visual aids. If the school is not too large, this organization may center in the principal's office; otherwise some teacher in the building should be given a reduced teaching load to allow some time for the control of visual aids used in the building.

Until better educational films are produced, centers for the selection and distribution of motion pictures are especially needed. Good films are expensive and should move quickly from class to class, but the integration of the film with the lesson should not be sacrificed for the sake of rapid circulation.

The article by Marian Evans will explain further the duties of the staff of a visual-education department and the economic problems to be considered. The section in Dorris's book on administration is also quite explicit, although the figures, which applied to the Berkeley schools in 1919, are no longer helpful.

Evans, Marian (San Diego, Calif.) "Budgeting for Visual Instruction." *School Executives Magazine.* 53:19-20. September 1933.

Modern schools demand a visual-instruction center for these reasons: (1) Parents realize the value of visual aids and many parents' organizations raise funds for equipment. (2) Teachers and principals endorse them as essential materials, especially for

enlarged class registers. (3) Visual aids can teach local and current community history in flexible form; books cannot be so detailed or supplemented so easily. The scope of the department should extend to all instructional materials except books and supplies and should include materials of multiple-sensory appeal.

A visual-education center should serve as a collecting, organizing, and distributing center for visual and other instructional aids; a teacher-training and advisory bureau on techniques and use of materials; a production plant and photography laboratory for making aids; a testing division for the evaluation of visual materials and equipment; a correlating center for educational organization such as museums, galleries, zoos, and so on; a center for the display of students' work.

The work of the director cannot be done by the librarian or warehouse staff because the director must be thoroughly acquainted with curriculum content and methods, from kindergarten through high school. He should also have business experience for purchasing, producing, and testing visual aids. A specially trained staff includes: the director, a technical director, a teacher-and-research-assistant for films, another for slides, and other aids—clerk, secretary, and so on. There should also be a film inspector, emergency carrier, and janitor for part-time work.

Expenditures of a visual-education budget usually fall under the following categories:

1. Funds for the circulation of visual aids, such as exhibits, specimens, realia; slides, film slides; silent and sound films; pictures, charts, posters, plates, portfolios; stereographs; still films; photographs.

2. Funds for the maintenance of a department and upkeep of the equipment. Expenses include the cost of photographic equipment; the developing, printing, and production of films; the upkeep and purchase of departmental demonstration equipment; the assembly section, i.e., film editing and repair, classifying, organizing, and mounting of pictures, posters, slides, exhibits; shipping and postage; upkeep of projection equipment in schools.

3. Salaries.

4. Necessary funds for the installation of standard equipment permanently placed in schools. This expense should be charged to capital outlay or to the building fund.

Often auxiliary agencies pay all costs for visual education, except salaries.

In figuring the annual allotment, take the percentage of the per-pupil daily attendance to cover all expenses except the initial cost of equipment (which, as has been said, should be taken care of in the building fund). If paralleled with the amount allowed for books, the rate would be 75c to $1 per average daily attendance for elementary-school pupils and $2 to $6 per pupil in high schools.

Visual instruction might even cut down on the number of repeaters, which cost about $112 each, annually. It may also cut down truancy because the class work will be more interesting.

Dorris, Anna V. "Administrative Problems of Visual Instruction in the Public Schools." In *Visual Instruction in the Public Schools.* Ginn and Co. Boston. 1928. Part III, p. 369-426.

Plans for teacher training include:

1. General instructional classes once a week for five or six weeks, held by the head of the department of visual instruction with attendance optional. Lectures and demonstration lessons.

2. General training for rural schools through conferences with rural supervisors and through annual institutes and section work.

3. Teacher-training colleges to give courses in visual education to prospective teachers and in-service teachers.

The course at State Teachers College in San Francisco, California, in 1922 included personal visits by the instructor to schools whose principals had requested concrete suggestions for using visual aids. The content of the course included instruction in techniques and principles for using visual instruction, a discussion of sources of materials and equipment and how to use them, and consideration of how to enrich the curriculum by visual instruction.

A visual-instruction department must select, buy, and circulate materials for every subject in all grades of the curriculum and must be equipped to guide teachers in the use of materials and equipment. It is therefore separate from, yet must cooperate closely with, every other administrative department of the system.

The general duties of the director of visual education are many. They include the organization and supervision of the department and office help; making up and spending the budget; consulting groups of teachers, principals, and supervisors, and advising with them on types of materials needed; selecting and buying materials for all subjects in all grades; organizing and classifying materials; selecting and buying all types of apparatus; issuing bulletins on materials on hand and announcing meetings; holding teachers' meetings by grades and demonstrating the use of apparatus and materials; compiling a course of study, or teachers' guide, with the cooperation of teachers, principals, and others, to offer suggestions for use of different materials in various types of lessons; supervising the organization and compilation of an annual catalog; visiting schools to help teachers with their special problems; giving advice and assistance to community clubs; conducting special college courses in visual instruction; supervising the preparation of the annual report to the superintendent of schools and the board of education; occasionally previewing films with teachers.

To perform these varied duties, the director must be a scholar with a broad knowledge of the fundamental principles of modern education. He must know subject matter and techniques of teaching. He must have an extensive teaching knowledge and, if possible, teaching and supervisory experience. He must know primary, junior-, and senior-high-school fields thoroughly. He should have a reasonable amount of business ability and a thorough knowledge of the field of visual education. He must know how to cooperate with supervisors and faculty.

The director's staff should include a mechanical expert, an assistant and stenographer, an office helper, a delivery man.

The Berkeley, California, schools in 1919 used the following procedure in setting up a department. A room was set aside as a visual-instruction center and equipped with shelves, and so on. Materials, such as slides and exhibits, were gathered from all schools and commercial agencies. One portable motion-picture machine and two stereopticon lanterns were purchased. (All but two of the schools had already owned such equipment.) A small portion of the budget was set aside for rental of strictly educational films. Lists of such films had been sent out by a committee and referred to the course of study. Letters were sent to commercial and industrial firms for material. Slides,

pictures, and stereographs were, in time, carefully selected and purchased. They were then classified. Pictures from the *National Geographic* were mounted and filed. Habitat groups of birds and small animals were made by the Academy of Natural History at Golden Gate Park. (The cases had been made by manual-training students.) Monthly teachers' meetings were held by grades. A chairman of visual instruction for each school was selected.

The budget was $5000 to $6000 annually. Films did not have to be purchased, since the University of California's distribution service was in the same city.

A monograph by Edgar Dale and Lloyd L. Ramseyer, of Ohio State University, entitled *Teaching with Motion Pictures: A Handbook of Administrative Practice* contains a summary of the problems of visual instruction as expressed by administrators, with suggestions for their solution. The book was published in 1937 by the American Council on Education, Washington, D.C. and should be consulted in its entirety.

The recommendations which follow were formulated by Brunstetter after an intensive program in cooperation with a group of school systems containing schools of various sizes and types, so selected as to furnish a cross section of the educational field. The outlines for a program in the Hershey, Pennsylvania, and Evansville, Indiana, schools, respectively, are included on pages 62 and 63. Brunstetter's suggestions represent recent judgments concerning effective administration for visual education, and are concerned almost entirely with the educational sound film. The ideal set-up, however, includes all possible types of visual aids.

The article written by Gregory in 1927 stresses the need for correlating visual aids with the course of study and illustrates with the Cleveland course of study.

Brunstetter, M. R. "Organizing an Audio-Visual Instruction Program." In *How to Use the Educational Sound Film.* University of Chicago Press. Chicago. 1937. Chapter IV, p. 73-95.

The use of films and other instructional materials should be developed as a program, with all the planning and coordination that the term implies—administrative services, integration with the curriculum, assistance to teachers in the use of the medium, a study of problems relating to the mechanical aspects of the program.

Creative administration demands vision before supervision in outlining the direction of the educational program. It solves the minor problems of class schedules, plant facilities, and the provision of supplies, so that the teacher is free to concentrate on the growth of the students in his charge.

Effective utilization of audio-visual materials of instruction must be planned in terms of local objectives, curriculum needs, available services, and plant facilities. Preliminary investigation is needed of the courses of study for which superior films are available; courses of study which need more effective materials of instruction; courses of study for which teachers need more command of subject matter; desirable courses which might be initiated if suitable materials of instruction can be secured; special projects and activities, such as extracurricular work, teacher training, adult education, and the like, to which audio-visual aids might contribute.

The next step is to make a survey of all the materials owned by the local system to determine the extent to which each type is used, how materials are secured and distributed, what facilities are available for projection, and so on. This survey should take into account administrative provisions as well as the teachers' competence in the use of materials.

A survey should also be made of the local staff to determine the individual or individuals most competent to direct the projected program. If committee work is to be organized, which teachers or principals are best fitted to participate? What should be the duties of a special director, other than those related to audio-visual aids? Is course-of-study revision contemplated which could be coordinated with certain aspects of the program?

The classroom teacher should be given ample opportunity to cooperate in carrying out this survey and in planning for the development of a program.

Planning the film program.—There are five elements in a program for audio-visual education: (a) training teachers in the effective use of audio-visual aids; (b) selecting audio-visual materials and integrating them with the curriculum; (c) developing new areas of instruction; (d) providing films, equipment, and projection facilities; and (e) organizing the administrative, clerical, and mechanical services. Each of these elements may be developed in three steps: (1) preliminary preparations, (2) experimentation and study, and (3) expansion.

In school systems where efficient departments of visual instruction already exist, the problem would be only that of organizing the use of sound films into the system. [The provisions for such a program in the Englewood (New Jersey) Junior High School are described.]

Organizing services for an audio-visual instruction program.—In beginning the use of sound films, the administrative, clerical, and mechanical services usually can be handled by existing personnel. There are advantages other than financial when the present staff administers the initial stages of the program. This insures the immediate participation of all individuals on the staff and familiarizes them with the problems which are to be solved. Solutions for routine activities, such as the distribution of films, will be more readily achieved by persons who are already acquainted with the school system.

Administration in one school system with seven elementary schools and a large junior-senior high school has been placed in the care of one elementary-school principal (for the elementary schools) and the biology teacher (for the junior-senior high school). An interne teacher is in charge of handling the materials in the central library.

In a school system of eleven buildings, efficient administration has been carried on through the efforts of a part-time director assisted by a secretary-clerk [A program for a large school system is outlined as suggested for the Evansville, Indiana, schools. The program is summarized in the present volume, p. 63.]

Selecting audio-visual materials and integrating them with the curriculum.—Materials may be selected and integrated by committees consisting of teachers who have before them certain set standards to guide them. A permanent reviewing committee might be set up to recommend rental films. Integration with the curriculum should involve no more than the listing of certain films available to teachers in connection with specific units of instruction. This might be made possible by mimeographed bulletins from time to time.

Developing new areas and modes of instruction.—There is much evidence of the value of the sound film in platoon schools where several classes view the film in the auditorium. Health or music programs adapt themselves well to auditorium use. In certain school systems the availability of sound-film material is facilitating the introduction of elementary-science courses. Many high schools are teaching appreciation of the sound film as an art form in regularly scheduled classes.

Gregory, William M. (Director, Educational Museum, Cleveland, Ohio) "Visual Aids in the Classroom." *Elementary School Principal's Sixth Yearbook.* 6:251-60. April 1927.

Visual aids assist the pupil in many ways. They give concreteness to ideas, connect words with objects, visualize factual conditions, economize time in understanding facts, interest pupils with objective materials, offer substitutes for excursions, furnish an approach to problems, create ideals, stimulate imagination.

Before visual aids are incorporated into the curriculum, proper experimentation must be carried out as to the desirability of using each type of aid and the time and place for its use. Purchase of materials must be made regularly, not spasmodically. Proper organization is essential for any effective use of visual materials.

School organization necessary.—There should be units of activities based upon visual material. The experimental school should apply and evaluate this procedure; the results may then be made a part of the course of study.

There should be unit graded sets of illustrative materials classified as to cost (determined by classroom tests made before the purchase of the material) and authenticity (whether the material was made by educators or commercial firms). The

visual material should be listed in each course of study and in a separate catalog. The material should be kept in repair by an expert.

The distribution of units of visual aids should be at the opportune time for the activities of pupils in regular classroom lessons. Detail as to delivery methods depends upon the size of the school or community. Economy is effected by a regular delivery-and-collection route to the teachers.

The classroom use of visual aids depends upon the teacher. There must be definite techniques, however, for their use and teachers should be specially trained in these techniques. A set of standards for each type of aid should be set up. Visual aids not closely related to classroom activities should be excluded.

Some school systems issue a catalog of lantern slides, films, specimens, and so forth, that they make available to schools. Teachers select the aids they want at the time they think best. Many of these lists reveal why visual aids have not been more rapidly accepted in modern education. Three-quarters of the pictures listed by some schools and state universities are advertising films of no educational value; many of the lantern slides are quite unrelated to actual school activities.

The Cleveland course of study, on the other hand, illustrates how visual aids may be made an integral part of the curriculum. Among the visual aids used are mounted pictures, lantern slides, exhibits, and motion pictures—one a term, if any.

McClusky discusses the problems of administering a department of visual education after tracing the steps in the visual education movement. He views city administration from a broad, nation-wide point of view and cites instances of varying techniques in operation in several cities of the United States.

McClusky, F. Dean (Director of Scarborough School, New York; President, National Academy of Visual Instruction) "The Administration of Visual Instruction in the Public Schools." *Junior-Senior High School Clearing House.* 5: 207-14. December 1930.

The increase in the number of available photographs and illustrated textbooks and the cheapness of slides and stereographs have made visual education a necessity and not a luxury.

There have been three distinct phases in the development of organized visual education:

The school museum movement (1905-14).—See chapters on "Educational Work of American Museums," in annual reports of the U. S. Commissioner of Education, 1913-14-15-16.

The university extension movement (1915-19).—The Bureau of Education in Washington, D. C., deposited 100 reels of film in each of over twenty extension departments of education, thus giving an impetus to the circulation of visual aids.

The creation of visual-education bureaus in city school systems.—The Chicago bureau, the first established, resulted from a projection club that ten elementary-school principals started in 1895. The stereopticons they purchased were finally placed in the care of a visual-education bureau. Many other cities have since established such departments.

Directors of city visual-education centers are usually appointed because of their success in handling visual aids as teachers, principals, or supervisors. Many of them have handled visual aids without much financial assistance.

The responsibilities of the director are as follows: to keep in touch with sources of new material; to select wisely, to construct, or to reconstruct material and correlate it with the curriculum; to interview teachers and principals with respect to the handling of visual aids; to administer the routine of the department; to follow up breakage and delays in transportation; to supervise the use of materials; to help teachers with special exhibits; to make tabular studies of the extent of the service; to arrange for proper dissemination of information regarding the rules; to prepare rules and regulations for borrowing materials; to prepare or arrange for the preparation of lesson units correlating with visual aids; to render a report at stated intervals to his superior.

The well-qualified director should have thorough experience and training in handling people, in the technique of teaching, and in educational administration; he should have training in the science and art of photography, in the preparation of museum exhibits, in the handling of projection equipment, and in preparing catalogs and reports.

The assistant director usually does just what his title implies; that is, he assists the director in carrying out his duties. In some

cases he carries on certain of the duties himself, leaving others for the director to conduct. In Pittsburgh, for example, the assistant director carries on work with nature study and the director is free to carry on other activities. In New York City, the director is a lecturer and the assistant director is responsible for a large portion of the work.

A visual-education staff also includes stenographers, clerks, chauffeur, and licensed operator.

Cost of visual education.—A survey of the National Academy of Visual Instruction showed that thirty-four cities and twenty-three states spent over five million dollars on visual education in the period 1923-30. (See McClusky, "Progress of Visual Instruction in the United States." *Educational Screen.* September 1930.) Of the five million dollars, 51 per cent was used for salaries, 38 per cent for the purchase of new materials and equipment, and 11 per cent for operating expenses.

City bureaus own about $300,000 worth of equipment and materials; state bureaus about $600,000 worth.

Methods and extent of the distribution of visual materials.—Bureaus distribute films by (a) "circuit method," and (b) special-order method. Under the circuit method, rented, loaned, and school-owned films are sent to schools in a regular system of exchange. Under the special-order method, the bureau acts as a broker for ordering films, or stores films in its library until they are desired. The pedagogical value of the special-order method is evident. St. Louis combines the advantages of both methods by having the delivery truck stop regularly at the school for teachers' special orders.

Slides are usually sent out by the special-order method. The best methods of transporting visual materials are by truck, special messenger, or school messenger.

City museums, libraries, and other institutions have co-operated closely with school departments of visual instruction. (See, for example, museums and libraries in Buffalo, Chicago, Cleveland, Detroit, Los Angeles, Newark, New York, Oakland, Philadelphia, Pittsburgh.) They attempt to organize exhibits, and so on, in terms of school curricula. They often "take the museum to the schools."

After considering these proposals for setting up a city system of visual education, it might be well to note the findings of a study of supervisory relationship to materials of instruction, based on an informal questionnaire sent to members of the Department of Supervisors and Directors of Instruction of the National Education Association. The findings represent current practices in administering various materials of instruction, including visual aids.

Southall, Maycie. "Supervisor's Relation to Improvement of Materials of Instruction." *Materials of Instruction,* The Eighth Yearbook of the Department of Supervisors and Directors of Instruction, National Education Association. Bureau of Publications, Teachers College, Columbia University. New York. 1935. p. 149-83.

Determining the materials needed.—In answer to the questions, (1) what is being done in the system to provide better and more adequate materials of instruction, and (2) what in their opinions should be the supervisor's responsibility and how it should be met, there were sixty replies.

Materials of instruction are defined as those tangible, visual, auditory, kinesthetic, gustatory, and olfactory aids to learning that are actually used by pupils. In selecting materials, it was the general opinion that consideration should be given first to the children—their interests, needs, and abilities; second, to the educational objectives that the materials are expected to further; third, to the size and organization of the local system; fourth, to the amount and kinds of material already on hand. The resources of the local environment and the funds available for purchasing materials must also be considered.

Various people were reported as being responsible for determining what materials were needed. In some cases, the supervisor decides upon the most desirable types in view of curriculum needs; in other cases, the selection is made by the superintendent of the bureau of supplies. Sometimes staff members prepare a list of materials needed in their respective departments, or requisitions may be drawn by heads of departments and others. Again, a committee of teachers—the membership based on significant work done in the field in question—assists in finding materials most needed. In other cases, the

responsibility is given to a teachers' advisory committee, selected by teachers, which meets frequently with the supervisor. Or special committees may be appointed to investigate new materials and make recommendations annually to joint conferences of teachers, principals, and supervisors. Or the supervisor may act in an advisory capacity to committees, such as (a) a special committee appointed to investigate specific materials, (b) committees working on the course of study, (c) a teachers' advisory council.

It is noteworthy that the majority of those reporting utilize the cooperation of many people in determining the instructional materials most needed.

Needs are determined by observation of materials used in other systems, by study of equipment listed in catalogs, or through the recommendations and requests of teachers and pupils. Suggestions are gained, in some cases, by reference to students' records: curriculum records (used as a basis in nine of the replies), pupils' reading records, as revealed by library cards showing books and magazines most used, or school progress records and standardized test results, indicating weaknesses in the work with students. Experimentation was used by only four supervisors and usually for new materials, especially new textbooks.

It is important that the supervisor lay before the superintendent the needs of the pupils in such a way that materials shall receive a just share of the school budget at every grade level. He should also acquaint parents and organized groups with the need for various types of materials and their use.

Developing an appreciation of visual aids.—It was reported that an appreciation of the educational value of visual aids was developed by means of study groups held in classrooms. These groups investigated creative materials of various kinds, new and old materials available for the same purpose, new environmental material, the adaptation of materials to the needs of exceptional children, and techniques in the use of different materials. Appreciation was also stimulated through demonstrations, by materials committees, by visiting other schools, by teachers' excursions, and by the exhibition and circulation of materials.

Sources.—Sources for commercial materials are found to be exhibits (5 types), reading books and magazines, studying

advertisements, analyzing curriculum records, interviewing or talking with others. Sources for environmental materials are found through surveys of the community, guides for teachers and parents, and through the use of children as explorers.

Selection of materials.—Materials are selected in the following ways: by experimentation—especially for new materials before their purchase; by using the expert opinion of specialists in the respective fields (resorted to by only four supervisors); by using local opinion, either of one person or of many; by exhibits or displays; by requisition, either from lists of materials already available in the Central Bureau or from additional lists of suggestions.

A threefold responsibility was recommended for the supervisor in the selection of instructional materials. The supervisor must be well informed in order to guide in the selection of materials. He must know trends in the improvement of materials of instruction, research findings, new materials published, recommendations by specialists in different fields, and reactions of teachers and pupils to materials being used. Recommended lists of materials should be compiled with the cooperation of teachers and principals and should be kept up to date.

Instructional materials are secured by purchase—through the board of education, through parent-teacher groups, or through children and teachers. Materials are also secured by collection, by construction, and by loan and exchange.

Making materials available.—Various systems were reported. In some instances, there are centrally located depositories—in a central office, or in the central library, or in the supervisor's office. Only two supervisors reported a materials bureau—one under the direction of a full-time person, the other under the direction of a group of teachers who took turns in keeping it open. In other cases, there is an exchange of materials by teachers, or a classroom is used as a depository, or there is a materials bureau located in the principal's office in each school.

Promoting more efficient use of materials.—This is accomplished through demonstrations (a) of how to use new materials correctly, (b) of new uses for old materials, (c) of how certain materials may be used for several purposes, (d) of how to substitute inexpensive for expensive materials, (e) to

emphasize the purpose of materials that teachers are not using, (f) to encourage teachers to use environmental materials. Other methods of promoting efficiency are through discussion, exhibits, printed and mimeographed guides, courses of study, and intervisitation.

Recommendations.—Recommendations offered include the following: The supervisor should help teachers organize and administer efficiently the materials available; waste of all kinds should be eliminated; cooperative purchase and use of material should be encouraged whenever possible; a schedule should be used to promote borrowing of rare or expensive materials in advance; cheaper substitutes should be used whenever advisable; teachers should be induced to make more use of environmental materials; opportunities to see materials used more effectively should be given teachers through demonstration, exhibits, and intervisitation; teachers should be stimulated to experiment with many creative uses of materials; new uses of materials observed in the system or elsewhere should be reported to teachers.

Evaluating materials in terms of child growth.—Materials are evaluated subjectively by (a) supervisor appraisal, (b) teacher appraisal, (c) cooperative appraisal of supervisors, teachers, and principals, and (d) pupil appraisal. One supervisor said that "the child himself is the best evaluator." Other means of evaluation reported the use of standardized test results, individual and group records, and experimentation.

Summary.—The improvement of materials of instruction might be directed along three lines: (a) to meet the needs of the changing school program, (b) to comply with research findings regarding children's interests, needs, and abilities, (c) to be adapted to individual differences.

Supervisors may cooperate with others in improving materials as follows: (1) They may cooperate with state and national committees that are experimentally preparing materials. (2) They may stimulate discovery of new materials by local groups. (3) They may cooperate with publishers by letting them know which materials are unsatisfactory. (4) They may write materials that are useful to teachers and children. (5) They should welcome suggestions.

The abstracts which follow are based on plans that the writers evolved to fit school systems of varying size.

The plan described by Worrell is based on the author's experiences in administering such a program in a small school system in New Jersey. The information given in this article is very concrete and up-to-date.

Enlow's program is a committee report for the National Academy of Visual Instruction. He poses three practical questions and recommends ways of answering them. His figures are average and may be applied to cities of 100,000 population or over.

Reitze sets up, from data drawn from over 150 school systems, what he calls a flexible plan, applicable to a city of about 350,000 population. Reitze used this material as subject for a thesis, "Organization, Functions and Administration of a City Visual Aids Department." The plan is complete and extensive.

Crakes, as principal of the high school in Moline, Illinois, formulated a plan for cities of 30,000 to 50,000 population. This plan offers practical suggestions for its execution, such as names and addresses of dealers and distributors, cost estimates, and so on.

Emery's article dates back to 1925 and may not have many implications for present-day administrators; for example, provision is made only for 35-mm. motion pictures, used exclusively at that time. The abstract is worth reading, however.

Worrell, F. Marshall (Junior High School, Englewood, N.J.) "Establishing a Program of Supervised Audio-Visual Education." *Educational Screen.* 16:6-8. January 1937.

Physical organization of a department of visual education.— The task of a director of visual education is to place at the disposal of the instructor the materials most useful in the teaching of her problem and through suggestion and example aid her to achieve perfection in their use. A department of visual

education might be organized somewhat as follows as to personnel and visual-aid centers:

The personnel should include a *director* of audio-visual education, who will be directly responsible to the superintendent of schools, assisted by a *visual-education committee* made up of one teacher from each school, each responsible to her principal and to the director for the successful execution of the program in her school. There should also be *technical assistance.* The cooperation of the art supervisor, music supervisor, industrial-arts supervisor, or other such persons who might furnish technical information in their particular fields would be valuable. Heads of departments may also cooperate in correlating visual materials with the course of study. Additional assistance may be given by teachers interested in photography who might make photographic materials with the cooperation of a photography club; by a motion-picture operators' club, made up of interested students of junior- and senior-high-school age and trained by the director to operate projection equipment; by some member of the clerical staff who should service materials; and by teachers having hobbies in some specific branches of visual education, such as collecting pictures or specimens, making puppet shows, supervising school museums, and the like. A *clerical staff* made up of members of the high-school commercial department may aid the director in various office routine duties. There should also be *messenger service* between the various schools and the visual-education center.

The headquarters for the visual-aids department should be located in a room set aside for the purpose in a central school building. The room should be suitably equipped to serve as the (a) meeting place for the visual-education committee, (b) office for the clerical force, (c) library for visual-education magazines, catalogs, and the like, (d) repository for department records, (e) repository for such visual materials and projection equipment as may be held by the department for distribution, (f) workshop for making or repairing materials, (g) projection room for previewing, (h) repository for school museum and art gallery.

Smaller centers should be developed in each building under the immediate supervision of the committee representative, and should contain: (1) raw materials related to the work of the individual school; (2) projection equipment held by the school;

(3) copies of slide and film records, catalogs, and the like; (4) such facilities as will fit them as meeting places for the departmental representatives in planning their use of visual materials; and (5) projection facilities for previewing.

Preliminary activities of the department.—These include: (1) acquainting the school administrator with the department's program, (2) acquainting the visual education committee with its duties, (3) acquainting the teacher with department facilities, and (4) organizing and classifying all visual materials.

After the official creation of the visual education department, the superintendent may call a principals' meeting in which he will explain his reasons for establishing the new organization and request their cooperation. The director then describes in detail the functioning of his department, its value to principals and teachers, and ways in which principals may assist in carrying on the work. He must impress the principals with the fact that his is a service organization, set up primarily to assist both teachers and principals in carrying on the work of their schools in so far as it is concerned with visual materials.

The principals will subsequently select those teachers to serve on the visual-education committee. These will include persons whose interest, initiative, and willingness to cooperate will assure the successful execution of the project. The committee will confer with the director in a series of meetings in which he will explain the entire program. Each will be made acquainted with his duties and will take steps to carry out the details allotted to him.

The committee representatives or the director will then meet with the teachers in their regular monthly teachers' meetings, and "sell" the idea to them, describing how the department hopes to assist them in their work and explaining the routines involved in selecting, ordering, and reporting on materials used. In so far as is possible at the time, he shall acquaint the teachers with the available materials on hand and inform them as to the quantity and quality of materials procurable from outside sources. The director will subsequently meet with smaller groups in their department meetings and aid them in planning the use of materials and correlating them with their syllabi or course of study.

A survey should be made of all visual-auditory aids now in the possession of the teachers or schools. The materials should be classified according to (a) type of visual aid, (b) condition, (c) value or quality, and (d) usability in specific grades or subjects. Based on the results of this survey, catalogs should be compiled for the elementary grades, junior high and senior high schools, listing the worth-while materials according to type and subject. These classifications should be made by the visual-education committee or based on the judgment of previous users.

In cases where an individual teacher has made a collection of visual aids as a private enterprise, such a collection should be left in her possession or stored in the visual-education center, if it is desired. It is desirable to encourage individual initiative in the collecting or making of visual aids, and their ready availability will contribute much to their usefulness. The teacher, however, should be willing to cooperate with the department. The name of the teacher and school responsible for such items will be indicated in the catalog to facilitate scheduling and handling. Items of a general nature or of a type infrequently used should be made available for general distribution and may be stored in the visual-aid center.

Thornton, D. C. "Why a Department of Visual Education?" *Nebraska Educational Journal.* 16:381. November 1936.

The purpose of having a supervisor of visual education is the same as the purpose of having a supervisor for any other department: to make easier the learning process through improvement of the teaching procedures. Perhaps in no other department is supervision more needed than in a visual-education department.

Teachers have had little if any training in the use of visual aids. Few institutions of higher learning offer visual-education courses. The average teacher is still in the dark so far as visual aids are concerned, and because of inertia and a very human willingness to let well enough alone is content to remain in the dark.

Teachers must learn how to use visual aids and how to measure their effectiveness. A supervisor can do much to bring this about. He can devote his time to studying the general and specific problems of the department; carry on research work

to measure effectiveness; organize materials; try out procedures and techniques; keep informed as to the subject matter being taught; suggest visual aids for particular units of work; and see that effectiveness is attained in the use of visual aids. The director may aid, further, in planning special programs for the entire school and may work in harmony with the art department and other departments throughout the system in the use of visual aids.

There must be a central source of visual materials to care for many and varied needs. Arrangements for renting still films, slides, and moving-picture films are made by the central office. The director must meet with teacher groups to plan a visual-aids program. If the school owns films and slides, these must be stored, filed, mended, and checked. Visual aids, as well as the syllabi or teachers' aids that accompany them, must be cataloged. Projectionists must be trained. Pictures should be evaluated and these evaluations filed so that the poor pictures will not be reordered.

Enlow, E. R. (Atlanta, Georgia) "Some Tentative Standards for City Visual Education Programs." *Educational Screen.* 10:167-9. June 1931. The report of a special committee of the National Academy of Visual Instruction, of which the writer was the chairman.

The problems considered by the special committee of the National Academy of Visual Instruction were: (1) What is the cost of an adequate visual-education program? (2) Which visual aids should be permanently placed in schools? (3) What is the desired size of staff and what positions would be needed?

Conclusions.—(Based on nine completely filled questionnaires answered by city directors):

1. The average cost per pupil is 60c per year, with a range of from 30c to 90c.
2. Visual aids should include stereographs, specimens, prints, film slides, motion pictures, exhibits.
3. Visual materials must be classified according to the extent to which it is thought best to circulate them, or locate them permanently in each school.
4. The salaries should be about 50 per cent of the budget, with a range of from 40 per cent to 65 per cent. But there should be a gradual increase of staff annually, so that at the

end of a five-year period, the maximum number of people will be employed. The largest part of the budget at the beginning is needed for purchase of equipment, but after the five-year period much of that allotment may be used for a larger staff.

Suggested staff positions are as follows:

Director
Assistant Director
Supervisor
Teacher
Laboratory Assistant
Secretary
Clerk
Slide Custodian
Film Custodian
Projectionist
Photographer
Assistant Photographer (projectionist)
Mechanic
Truck Driver

Reitze, Arnold W. "A Suggested Plan for a City Department of Visual Aids." *Educational Screen.* 10:261-2. November 1931.[17]

The plan is based on data from more than 150 school systems. In a large department, it is to be used as a guide, not a final set-up. It required a period of years to formulate the plan. The work of organizing a visual-aids department is gradual.

The plan is applicable to a city of 350,000 population, in which there are 50,000 pupils and forty schools: elementary to senior high, and special schools. The size of the staff is based on Enlow's "Standards."

Organization of a visual-aids department.—The general aim of a visual-aids department should be to cooperate with all teachers and departments by supplying proper visual aids when needed.

A visual-aids *center* should be established for the purpose of distributing visual aids, trying out and examining aids and equipment, and for the making and repair of visual aids. Its location should be central and in a building no longer used for teaching. There should be space for a director's office, a general office and file reference room, a conference and demonstration room, a picture-, print-, and chart-file room, a film- and slide-file

[17] This is the outline of a plan used as the subject of a thesis at New York University: "Organization, Functions and Administration of a City Visual Aids Department." *Educational Screen.* January-March 1932.

room, a receiving, shipping, and repair room, a room for photographic material.

The types of aids circulated may include 16-mm. motion-picture film; glass lantern slides; film slides and still films; mounted charts, pictures, and prints; and exhibits. It is suggested that trucks be used for the distribution of aids and that the city be divided into five school districts, with one day reserved for each school.

Equipment under consideration for purchase may be studied and tried out in the visual-aid center, in test schools, or submitted to a committee of teachers and supervisors. The loan period for equipment should be one week.

The printed materials needed are loose-leaf catalogs, handbooks on the use of aids and equipment, suggested lesson plans, and forms for requisitioning, booking, shortage notification, exhibition report, slide check, and so on.

The minimum equipment suggested for junior and senior high schools is as follows: booth with standard projector, two 16-mm. projectors, six lantern-slide projectors, two opaque projectors, two film-slide projectors, six portable class screens, one standard auditorium screen; for elementary schools: one or two 16-mm. projectors, one opaque projector, four to six lantern-slide projectors, film-slide projector, four to six portable class screens, one auditorium screen.

It is suggested that aids be arranged in sets directly related to subject and grade with a maximum of twenty-five pieces to a set. These aids should be filed by subject, and by subject and grade.

Functions of a visual-aids department.—The primary function of a visual-aids department is to supply any teacher from kindergarten to high school with the proper visual aids when most needed.

The specific functions of a visual-aids department are many. The department should train teachers in proper methods of using aids and equipment. It is responsible for acquiring new aids—by printing, purchase, renting, or through the courtesy of the manufacturer. It should standardize and select aids and equipment. This may be done by study at the visual-aids center, or by committee, or through test schools. The department is also responsible for the care and repair of equipment, though

schools should be responsible for damages. It also relates visual aids to the course of study. This problem may be studied by committees, and the procedure then tried out in test schools. The department should, further, establish a photographic section to duplicate any material and to prepare photographic material for teaching aids and publicity. Publicity may be secured through school activities with parents and pupils, through civic organizations, and so on.

The supervision of the department should be general, and cooperation with all school departments, such as art, domestic science, guidance, health, sewing, music, and so on, is essential.

Administration of a visual-aids department.—The visual-aids department should be directly responsible to the superintendent of schools. Its rules and regulations should be general enough to meet all situations. Rules for borrowing aids should be simple and brief.

The personnel of the department may be as follows:

Director. Chief duties: general organization and administration; study, evaluation, and selection of visual aids; demonstration and supervision of aids.

Secretary. Duties: correspondence, telephoning, mimeographing, reports, and so on.

Booking Clerk. Duties: to gather and requisition visual aids, send to delivery clerk, keep records.

Shipping Clerk. Duties: to gather aids, prepare orders for chauffeur, check incoming material and its return.

Projectionist (films only). Duties: repair, training others, inspection.

Repair Man. Duties: repair of all aids except films.

Photographer. Duties: to make up all slides, and so on.

Chauffeur. Duties: to deliver and collect material.

Crakes, C. R. (Principal, Moline High School, Moline, Illinois) "Organizing and Administering a Visual Instruction Program." *School Executives Magazine.* 52:11. September 1932.

The plan which follows was devised for a city of 30,000 to 50,000 population. There are two junior high schools and one senior high school.

Personnel.—(1) A part-time director. (If possible, a full-time director who can conduct the necessary research work.) The qualifications of the director should include university training in educational psychology, ability to conduct constructive research, some knowledge of the mechanics of photography and electricity. [A list of fourteen duties of a director is quoted from A. V. Dorris, *Visual Instruction in the Public Schools.*] (2) A full-time clerk.

[*Cost of equipment.*—The cost is given for practically everything that a department of visual instruction might need. The list includes the price of a motion-picture projector, as well as paste, twine, and so forth.]

The minimum investment for materials is approximately $1500. At least $1300 of this can be used over an eight- or ten-year period. Yearly rental and transportation costs amount to $1200, and there is $400 additional expense per year for the purchase of films, slides, and picturols. In five years there should be a sufficient library to warrant reduction in the cost of rental and transportation.

An annual outlay of $3600 for 3600 pupils is at the rate of $1 per pupil per year. The improvement in learning and in initiative should warrant this expenditure.

Distribution of materials. The plan for the distribution of materials to teachers calls for a card index system based on the requisitions made by teachers at the beginning of the term. Notice is sent to teachers well in advance of the arrival of material. A report from the teacher is required to determine whether or not the material will be used again and for what purpose. A synopsis of the lesson unit of each film or set of slides is made by the director, who previews all films. The projectors are operated by pupils. [See Abstract p. 70]

Emery, James N. (District Principal, Pawtucket, R.I.) "Visual Instruction in a Small City System." *Educational Screen.* 4:391-4. September 1925.

Visual education in a small-city system is usually a growth which comes from within, through the efforts of some individual or group. According to Hollis's study, in practically no city under 75,000 population is there a separate department of visual education. Yet such work is going on, perhaps unsystematically.

The following set-up could be used in a city of 70,000. There may be one senior high school, two junior high schools, eight elementary schools with an auditorium, fourteen elementary schools without an auditorium. Most work would, therefore, be done with charts, still pictures, maps, and so forth.[18]

Each of the junior and senior high schools would be equipped with a 35-mm. projector and a balopticon. A portable stereopticon would be placed in each elementary-school building. In the superintendent's office the following equipment should be stored and made available to schools according to a regular schedule: Four to six stereopticons; two portable 35-mm. projectors; four Brayco or S.V.E. Picturol projectors; two or three Keystone slide sets of 600; 3000 other slides (selected to correlate with the course of study); a library of picturol films; motion pictures rented from state universities, the Y.M.C.A., and U.S. Bureau of Mines. Dept. of Agriculture, and so forth. The slide services offered by the University of Wisconsin and the Department of Education of New York State are outstanding.

The money for visual education might come from the budget or from the parent-teacher organization. The department of visual education would in time be a normal part of the administrative system, just as are the departments of music, health, and so forth. At the beginning the director may be a principal or a special teacher.

Campbell, Laurence R. "The Five Year Program." *Educational Screen.* 9:292, 307-8. December 1930.

A "visual-education" program does not consist merely of occasional showings of slides or films in an assembly program. It should include a modern curriculum made up of teaching units and activities. The course of study should list specific films, slides, excursions, charts, and other visual aids, and make them an integral part of the course of study.

The administrator may aim for a two-, three-, four-, or five-year program of visual education, at the end of which the teachers will be well-trained and expenditures for equipment made. A five-year program of visual education might begin with the requirement that all teachers receive adequate training within the five years so that the program will be carried out most effectively.

[18] The list of equipment needed, it should be noted, has been modified considerably in the ten years since the article was written.

A good beginning might be made with an intelligent use of school excursions, still pictures, specimens, and models, all of which are comparatively inexpensive.

Projection equipment should be purchased after a careful study has been made of the particular value of each item. Such equipment includes projectors for showing slides, still films, motion pictures, and opaque pictures.

Knowlton, D. C. "Problems in the Administration of Visual Instruction." *Visual Instruction News.* 5:7-8. September 1931.

Administrative methods must be judged by educational outcomes. One picture adequately introduced and intensively taught may serve the teacher's purpose better than a whole series. There is danger that the viewing of films may be very much like the experience of a party of tourists trailing an overzealous guide through a European art gallery.

The writer's recent experiments at Yale exploded the theory that an extensive use of such materials was of greater value than an intensive, cumulative use. A less ambitious program—one making use of flat pictures, stereographs, and slides—may contribute more to real progress than the machinelike regularity with which certain forms of equipment circulate in some cities.

Angell, Herbert E. "Teaching Films." *Educational Screen.* 8:201, 218. September 1929.

Though motion pictures have always been said to be an effective aid in teaching, there are many reasons why they have not been introduced extensively in the schools.

Producers, for example, cannot profitably present instructional films fitted to a course of study. Films for school use must be specially edited. Industrial films, though made and distributed free, include too much advertising and are not fitted to courses of study. They cannot be referred to as teaching films. Films made especially for school use, however, are expensive and beyond the reach of most schools. Schools that use free films do not use discrimination.

Films definitely stimulate interest and encourage textbook study. Under ideal conditions there should be (1) a library of films in every school with a teacher's manual for each film, (2) projection equipment in each classroom.

A practical solution of the problem of cost that is being tried out in several cities is the establishment of a central library of films in the office of the board of education, with one room in each school equipped for projection. It seems impossible, however, to evolve a satisfactory renting system.

Recommended for classroom projection are: a quick and easy method of excluding light, a 16-mm. projector (easy to operate), a beaded screen (30 by 40 inches). The projector should be placed about eighteen feet away from the screen.

Excellent films are now available on nature, geography, hygiene, and science, and films on other subjects are in production.

As soon as a solution is found to the high cost and scarcity of subjects in instructional films, a new field will be opened.

Horning, S. D. (Pasadena, Calif.) "Programming in Visual Education." *Educational Screen.* 11:203. September 1932.

For an efficient distribution of visual-aid materials there should be a central department of visual education in the school system. The teaching corps should be trained and experienced in the use of visual aids. A chairman of visual instruction in each school should keep informed on all sources of materials, should select the best materials, and order for other teachers in the school. This will obviate duplication and insure prompt delivery. Such duties as research studies, correspondence, and servicing of equipment should belong to the director of the central bureau and not to the school chairman. The course of study should, as far as possible, make reference to specific materials and how they are to be used within a unit.

Whitcomb, Grace Slater. Formerly Special Supervisor, Spokane, Washington, Schools) "Who Shall Supervise Visual Instruction?" *Visual Instruction News.* 5:11-12. November 1931. A controversial discussion designed to stimulate thought among educators.

Various practices are current in the supervision and organization of visual aids.

The teacher may be left to her own devices. This plan is excellent when the teacher spends much time in research and preparation. It is too time-consuming, however, for the average overworked teacher.

The visual aids may be supervised by one teacher in the building. This usually places too much responsibility on one person and often leads to indifference on the part of other teachers, or to a neglect of visual aids by the person in charge.

The principal may make a plan for distributing the aids at stated times and for checking up on materials used and time spent. Under this plan, teachers who want materials do not receive them because they are scheduled for another room. One advantage of this plan is that the students of teachers who would otherwise be unlikely to use visual aids are benefited.

A visual-education director may be appointed for the whole school system, who will (a) demonstrate techniques, (b) distribute lesson plans, and (c) arrange for teacher-demonstrated lessons, followed by discussion. Unfortunately, some directors spend their time in purchasing and selecting materials rather than in helping in their practical application.

The state bureau of visual instruction may be utilized. This system is good for schools that cannot afford to buy equipment. It requires careful planning far in advance and makes no provision for unexpected activities when materials will be needed before or after the scheduled time.

No one plan has as yet been acknowledged as the best. The author raises the question but attempts no solution or recommendations.

B. *Some Experiences in Administering a City System*

The intensive survey made for the 1934 *Elementary Principal's Yearbook* gives us a good picture of the status and needs of visual aids in representative elementary schools throughout the country. The data presented are based on reports from 366 principals of schools in cities ranging in population from 2,500 to over 100,000. The chief findings are recounted here.

National Education Association, Research Division. "A Survey of the Use of Teaching Aids." *National Elementary Principal.* 13:150-9. June 1934.

This study is based on a questionnaire sent to 5,000 members of the National Education Association. Replies were received

from 7 per cent of these and represent mainly cities of over 100,000 population, although 45 per cent of the replies came from cities of 2,500 to 100,000. (See Table 1—Size of City and School Enrollment.)

Table 2 shows schools in which aids were used systematically. It may be noted from this table that maps are the teaching aids most often reported, but that other devices frequently used are globes, phonograph records, pictures, charts, posters, and exhibits.

Some aids vary according to the size of the school. For example, slides are eighth in frequency of mention in small schools, but second in schools of large enrollment. This probably means that larger schools are better equipped for projection. Smaller schools, however, use mounted and unmounted pictures more frequently.

Table 2 reveals also that silent films were used by 52 per cent of the schools, and sound films by 3 per cent. Here, too, the larger schools were most progressive. Again radio was used by 40 per cent of the small schools, and by 61 per cent of the large units.

Books, printing, stereoscopes, and gardens were not requested in the questionnaire and cannot be tabulated.

Table 3 shows those teaching aids that are particularly interesting to principals. Slides were preferred by over 50 per cent of the principals, mounted and unmounted pictures by 33 per cent, while about one in four was especially interested in exhibits, maps, and silent films.

Principals in larger schools are more likely to be interested in museums, silent films, and slides than are small-school executives. Yet principals of small schools are apt to have a special interest in exhibits, maps, pictures, radio, and charts. The crux of this difference lies probably in the need for an auditorium and equipment for projection materials.

Only about one in ten had a special interest in museums, phonograph records, or posters.

Table 4 shows which aids are supplied as a part of the regular equipment of the school system. Maps and globes are supplied by 80 per cent or more of the schools, slides and phonograph records by almost 50 per cent, while about one in four received allotments of silent films and charts.

Silent and sound films, slides, and radios are distributed as a regular feature by large school systems oftener than by small systems. Small schools frequently receive phonograph records and school museums from their administrative departments.

Table 5 shows which aids are purchased through teachers and which through parents and other unofficial sources. Almost 50 per cent of the principals receive pictures through unofficial sources, one in three receive phonograph records, radios, and exhibits in this way, and about one-fourth receive aquariums, slides, and posters.

Relatively more of the large schools reported outside aid. This is because of the greater likelihood of their having a parent-teacher association, or of their giving profitable entertainments, or because their teachers receive higher salaries.

Table 6 summarizes the aids that are made or obtained by pupils. Fifty-one per cent of the schools reported that pupils made or obtained posters. Exhibits were next in frequency (39.3 per cent), and charts third. About one in ten principals reported that pupils could make or obtain school museums, slides, maps, and aquariums. School size is not a determining factor in this tabulation.

Table 7 lists all the agencies that might possibly provide teaching aids. Out of 366 schools, 245 reported obtaining pictures from outside agencies. Public libraries supplied 180 (73.5 per cent). Exhibits were received from outside sources by 154 principals. Seventy-three, or 47.4 per cent came from local museums, while a few reported business firms as their source. Public libraries supplied slides to 142 schools, and, in many cases, books and films.

One hundred and ninety-five principals did not list the aids that they said they did get from outside agencies.

Table 8 depicts the means by which schools keep abreast of modern visual aids. Professional reports and bulletins were read by 57 per cent. About one-third of the principals either visited teachers, or had teachers keep informed, or had a committee of teachers report to the entire faculty. In 51 per cent of the cases the principal himself assumed this responsibility. Almost 4 per cent made no special effort to keep informed.

In larger schools, bulletins and reports were most used, but in smaller school units, each teacher was responsible for new developments.

Table 9 shows to what extent aids are incorporated into the course of study. Almost 92 per cent of the principals said that this was done, while 7 per cent reported no such coordination. Large schools again were most active, probably because they had printed courses of studies.

Following is the report of another survey, less extensive in its scope, but very suggestive. This study was the subject of a master's thesis and presents the status of visual aids and equipment in the secondary schools of Ohio. Other findings and recommendations of this study are found elsewhere in the compilation. [See Abstract p. 183]

Bard, C. L. (Principal, Liberty Center High School, Liberty Center, Ohio) "A Study of the Administration of Projector Apparatus in the Secondary Schools of Ohio." Unpublished master's thesis, Ohio State University, 1931.

Administration in this thesis is defined as the way in which the administrator, or school head, chooses projection equipment and adapts its use to educational purposes in the high school. This involves the solution of the following problems: (1) choosing projector apparatus that will best fit the high-school needs; (2) the housing of projector apparatus; (3) the responsibility for ordering projector apparatus and the preferred method of film distribution; (4) financing the projector program; (5) the presentation of projected pictures to the pupils; and (6) the sources of films.

A questionnaire was prepared with the assistance of Mr. Aughinbaugh, Director of Visual Education in Ohio, and Dr. A. O. Heck. From a list of 940 high schools, questionnaires were sent to 450. Answers were received from 215 schools, giving a fair cross section of the secondary schools of Ohio.

Projector apparatus in Ohio secondary schools.—Thirty-five-millimeter projectors are owned by sixteen city high schools, eleven exempted village high schools, and fifty-seven county high schools. Some own two or even three. Forty-six schools stated

they did not own such equipment, and fifty-four failed to answer the question. A small number rent these machines. Thirty-five-millimeter films are owned by but five of the schools reporting. Slide attachments were owned by sixty-three schools. Sixteen-millimeter projectors were owned by eighteen schools and rented by three more; 16-mm. films were owned by eight schools. Two high schools (in county systems) own sound-film equipment. Film-strip projectors are owned by twenty-four schools; opaque projectors by twenty-one schools; microprojector attachments by seventeen schools; stereopticon lanterns by sixty-five schools; lantern slides by eighty-nine schools. Microscopic slides are owned by several schools.

Housing of projector apparatus.—More projectors are housed in the assemblies than in any other room. This is due to the fact that the assembly is more accessible than any other room, has a larger capacity, and is usually equipped with a permanent fireproof booth. Many are housed in classrooms where they are used. Films, in those few schools owning them, are housed in the office or in the projection booth.

Ordering projector apparatus.—The majority of the secondary schools of Ohio order their projector apparatus individually. This is the most convenient method, but is it the most economical? In the city high schools the principal is by far the one most often responsible for ordering materials, while the visual-education supervisor ranks second. County high schools and exempted village schools do not mention the visual-education supervisor often. In such schools the superintendent is the one most often responsible, while the principal ranks second. In all three types the committee of teachers ranks third in responsibility, except in the city high schools where superintendents are tied for third rank. Many of the high schools use the circuit plan for purchasing and borrowing materials. In this way one person or a committee is responsible for ordering.

Methods of film distribution.—In answer to the question regarding the kind of film distribution preferred, forty-seven high schools preferred having individual school collections, fifty-one schools favored State-owned collections, forty preferred a county system of distribution, and only one city high school preferred the company-owned prints, slides, and films.

In 1930, Mr. Aughinbaugh asked the county superintendents of Ohio if they would favor a State collection of prints, slides, and films for distribution to the schools. Over 90 per cent were in favor of such a collection.

Financing the projector program.—Some thirty-nine high schools reported spending fifty dollars or less for apparatus and rentals, and twenty-three reported spending more than that on apparatus alone and eighty-six on rentals alone. These figures are high or low depending upon the size of the school, the size of the annual budget, and so on. Of the 215 schools reporting, 117 received their money from the school board. Other sources of money were the parent-teacher association, pupil admission, admission to the general public, pupil donations, general school fund, athletic association, State aid, and a women's club.

Presentation of films (reviewed in section on Techniques p. 183)

Sources of slides and films and approximate costs.—The source most used is V. M. Riegel; then come National Cash Register Company, the United States Government, General Electric, International Harvester, Ohio State University (Yale Chronicles), Pathe, and others. More high schools spend less than fifty dollars per source than those who spend more than fifty dollars per source.

Conclusions and Recommendations

Projectors.—For high schools with enough money, the best and latest equipment is recommended. The auditorium should be equipped with sound equipment, there should be enough still projectors for use in all classes, the science laboratories should be equipped with slide projectors and microprojectors, and all rooms should be suitably equipped for projection. Any high school can afford a motion-picture projector, a film-strip projector, and a microprojector attachment. Projector apparatus should be well housed and cared for.

Films.—It is not necessary, and usually not practical, for an individual high school to own its own films. A small collection of special films (purchased cooperatively by a few high

schools), and a large State collection would be the ideal situation. Films should be carefully housed and cared for usually by an extension of the high-school library.

Ordering equipment.—Some capable person, usually the principal or an assistant, should be responsible for the ordering of all equipment. Teachers and pupils, under the instructor's guidance, should choose films, slides, and the like, to be used. Where a circuit plan is used, a committee of teachers might be delegated to select the materials.

Financing the program.—The high-school budget should be so arranged that a certain amount of money will be allowed for projector apparatus. High schools should not compete with local theaters, neither should students be expected to finance this part of the school program. The high-school administrator must convince the school board members of the value of the use of projector apparatus in teaching.

Presentation of films (see section on Techniques, p. 183).

Sources for obtaining films.—It is not a question of where you obtain your films, but what films do you obtain? Are they educational? Will they help teach the children the things they should know? Are they adequate? The best plan would be for the State to have a collection of educational films and slides for distribution among the high schools of Ohio, these to be supplemented by films from other sources.

The study by Dunn and Schneider is by no means complete. It gives, however, a picture of current practice in representative cities. It has been briefly summarized below.

Dunn, Fannie W. and **Schneider, Etta.** "Practices in City Administration of Visual Education." *Educational Screen.* 15:269-70, 301-3. November, December 1936.

Reports from 81 cities and towns in the United States regarding their work in visual education reveal many points of similarity among cities, and some indications of individual initiative which are worth repeating for the use of administrators and teachers in other situations.

The person in charge of visual aids ranges from an individual teacher, to a supervisor or director of visual education. In some cases the director of the educational museum, the city librarian, directors of museums, and the like assume responsibility for distributing materials to the schools. Other persons reported as being in charge are elementary or high school principals, the head of the science department, the head of the art department, the director of vocational and industrial education, the superintendent of schools and the assistant superintendent of schools. It is noted, however, that a visual education program is measured by the extent to which teachers utilize it, and not by the official ranking of the person in charge.

Among materials usually distributed from a central library are motion pictures, mounted pictures, museum specimens, maps, charts, and lantern slides. Filmslides and Japanese prints are centrally distributed in two cases. Materials for making lantern slides and photographs are also administered from a central office in some instances.

These visual materials are located in a variety of places, namely, the principal's office, the superintendent's office, the city library, a museum, or a classroom.

In the matter of selection of materials, it was found that some schools enlist the cooperation of "improvement of instruction committees," "subject matter committees," or "curriculum revision committees." Some other practices are related, but the one in which teachers and supervisors lend most assistance is judged to be the most beneficial.

Distribution of materials may be made, according to these reports, by a regular delivery or circuit arrangement, or by a system of delivery depending upon individual requests from schools. In some cases a combination of these methods is offered. The most desirable procedure, it is concluded, is the one which makes ample provision for the individual teacher with the expert guidance of a curriculum specialist or a director of visual education.

Several means of instructing and counselling teachers in the use of visual aids have been reported: catalogs correlated with the course of study, handbooks, lesson units, or personal supervision.

In a great many cases financial support is secured outside the regular fiscal budget. Increasingly the cooperative system

of purchasing and borrowing materials among a group of principals is becoming popular.

In conclusion, it is stated that the problems of visual education can be met by planning and by proper administration and supervision. These problems, as indicated in the analysis, are the need for establishing a clearing house for information, adequate annual funds, guidance of teachers, and the routine distribution of materials.

The article describing the status of visual education in the Chicago schools will indicate the plans being made for improvement under the direction of Dr. William H. Johnson, now city superintendent of the Chicago Schools, author of *Fundamentals in Visual Instruction,* published in 1927.

The system operating in the Elgin, Illinois schools appears to be directly concerned with the needs of the classroom teacher and ways in which the routine of administration can be minimized.

Kruse, William F. "Visual Education Program of Chicago Public Schools: An Interview with Dr. William H. Johnson." *Educational Screen.* 16:84-6. March 1937.

The responsibility of the principal toward visual instruction is to make available proper materials and equipment, and to get as many as possible of his teachers to use these facilities effectively. The superintendent has exactly the same job, but on a much broader scale. Basically, however, the task is the same, to provide the materials, to show the teachers how and why to apply those materials, and to get them to do it.

Responsibility for securing and circulating materials, and for coordinating them with the course of study cannot be the task of an individual in a city the size of Chicago. This work is done by the Department of Visual Instruction, headed by Paul G. Edwards. Personnel also includes a Supervisor, five clerks, three film and slide inspectors, and part time artists when the need arises. The Department has accumulated, and circulates constantly 150,000 slides, 3,500 reels of 16mm. film to serve the 1000 stereopticons and 400 silent motion picture projectors in the schools. During the school year 1935-36 the Chicago schools

used 900,000 slides, and 60,000 reels of 16mm. film. The use of these materials has increased since that date due to the increased interest among teachers and principals, and to the increase in the number of projectors available. The Department distributes wall charts, and in cooperation with the Field Museum, object-specimen-models.

Slides are used beginning with kindergarten and lowest primary grades. Silent films begin to be effective from the fourth grade on, and sound pictures at present available seem best fitted for the seventh grade and up, with accent on the higher levels. The Department owns four sound projectors, three of which are used at the junior colleges. Six high schools have purchased their own sound projectors. A library of about 40 reels serves these sound projectors at present.

The basis of any teaching program, whether by visual methods or others, remains the teacher. The finest film libraries and projection equipment in the world will be useless unless we have a body of teachers willing to use them, and trained to do so effectively. There is usually no lack of willingness once the teachers have acquired the necessary understandings and skills.

The Chicago Normal College is planning to offer a formal course in visual education for all new students, and to place more stress on visual aids in the teaching of other subjects as the students progress through their general course. Teachers of the future will have as part of their background a thorough training in both theory and practice of visual education.

Classroom demonstration lessons are to be provided through ten school clinics, five in science and the other five in pupil-activization classroom projects. All will emphasize the important contributions of visual aids to classroom results. Every teacher will gain something from these clinics, how much will depend upon the individual teacher and her principal.

The initiative and self-reliance of principal and teacher are finally determinative in work of this kind. The visual instruction department furnishes the facilities, the individual principal devises ways and means to make best possible use of them. Where additional equipment was needed, many principals have used local funds or funds from P.T.A. groups. Some community showings were used to finance the program, the programs being made up of good entertainment films available on 16mm. prints.

The Department has been developed as an outgrowth of a "Projection Club" of principals organized in 1895. The size and scope of service rendered by the Department has grown tremendously since that time. In the last five years, for example, the slide circulation has doubled, the circulation of 16mm. silent films has increased six-fold, yet the cost of running the Department has been reduced to one-third the peak budget of 1927.

New media are introduced as they appear. The sound film is being introduced through the junior college, and increasingly extended to the high school. Further use will depend upon the demands of the teacher body.

Waggoner, E. C. "The Program of Visual Education in the Elgin Public Schools." *Illinois Teacher.* 24:284-5. May 1936.

The Elgin school system enrolls approximately 3,900 elementary students in eleven grade schools and 1,700 high-school students in one junior high and one four-year high school. For six years this system has been developing a visual-education program.

The aim of the program is to have the visual-aid materials available to the teacher at the time they are needed in the learning process. This requires planning for a semester or even a year in advance.

The success of a film showing depends on the correct preparation of the students for the picture. A teacher guide should be included with each film. When there is no such guide the visual-education director prepares an outline of the subject matter and sends it to the teacher in advance of the use of the film.

Sound projectors are rather expensive and it has been difficult to get boards of education to finance their purchase during the depression. The sound projector owned by the Elgin school system was purchased through the efforts of a student science club composed of thirty boys. The silent projectors used in the system are purchased by the board of education, which also finances the yearly programs.

More than one elementary school in Elgin must be serviced with one projector. A committee of principals aids the visual-education director in preparing the year's schedule. Junior and senior boys are used as projectionists in the high school.

A boy from this group is chosen as assistant in operating projectors in the elementary schools after his graduation. These boys have been found to be just as responsible as teachers in the care and use of this equipment.

The assistant projectionist makes at least one visit a week to each elementary school. The teacher is notified as to the exact hour of his arrival. The class which is to see the picture moves to the projection room with very little disturbance and a classroom attitude is maintained. The "show" idea has entirely disappeared.

The teacher is the deciding factor in determining the value of a motion-picture program. If she has carefully prepared the pupils for the aid and has a well-planned "follow-up," a good visual aid will undoubtedly achieve its purpose.

In 1934-35, as part of a study by the Erpi Picture Consultants, the Derry Township schools in Hershey, Pennsylvania, were fitted into a program for using talking motion pictures. The plan and costs are fully described in the brochure by Brunstetter. The purpose of the plan was to "stimulate local initiative in gradually working out a system for audio-visual instruction, which is completely integrated with the educational offering." The first effort was to orient the teaching staff to the new instructional medium, and then to present goals toward which the school system may work. This plan makes no provision for visual aids other than talking pictures. A similar survey was made in Evansville, Indiana, at about the same time. Both surveys have here been outlined.

Brunstetter, M. R. *The Organization of an Audio-Visual Instruction Program.* Erpi Picture Consultants, Inc. New York. 1935. 98p. Mimeographed.

The essential elements in this program were conceived to be: (1) teacher training in the purpose and function of educational talking pictures and techniques evolved as a result of training and supervision; (2) effective use of films when integrated with

the course of study; (3) growth of the program to include new techniques and new areas of subject matter; (4) growth in community support, through a program of adult education; and (5) mechanization of routine and skill in handling equipment.

There are three public-school buildings in the Hershey school system with the following teachers: kindergarten, two; elementary school, twenty-four; junior high school, eight; high school and trade school, twenty-two. There are also three special teachers and supervisors.

The school program suggested for talking pictures was organized under the following heads: (1) administrative service; (2) educational services: training of teachers, supervision, integration of sound films with curriculum, selection of sound films; and (3) mechanical services: delivery, operation, storage, repair.

Outlined by steps, the program calls for, first, *preliminary training,* preferably through a unit course (see Pennsylvania State course of study for visual education, or the Erpi course); second, a period of *experimentation* and analysis which might be carried on in science classes in the elementary, junior, and senior high schools, the lesson units being organized by a science committee which would give demonstration lessons before other teachers; and third, a *period of expansion.* The latter steps include teacher training, integration of sound films with courses of study,[19] selection of talking pictures from among those available, development of new areas of instruction, provision of films and equipment, and the administration of distribution.

New areas of instruction mentioned are: (1) adult-education courses in art, literature, civics, psychology; (2) religious instruction; (3) use in assembly programs; (4) courses in photoplay appreciation in high schools.

Brunstetter, M. R. "A Program for the Utilization of Audio-Visual Teaching Aids." Erpi Picture Consultants, Inc. New York. 1935. Mimeographed.

A plan proposed for the Evansville Public Schools, Evansville, Indiana.

[19] Brodshaug, Melvin D. "Integration of Sound Films with Science Courses of Study." (In *Program for Utilization of Audio-Visual Teaching Aids for Evansville, Ind.* p 133-82)

Organization of the Evansville Public Schools.—The population of Evansville is 102,000, with a student enrollment of 16,000 in the four high schools and seventeen elementary schools. The parochial schools have over 4,000 students. Evansville College, a denominational institution which includes a department of education, enrolls about 300 students. The administrative staff of the Evansville schools includes a superintendent of schools; a business manager with a staff; an assistant superintendent of elementary schools in charge of instruction in grades five to eight; a supervisor of instruction for kindergarten and grades one to four; a director of research in charge of secondary education; supervisors of special subjects, such as music, art, home economics, and industrial arts. The industrial-arts supervisor is also director of night schools. A director of health and physical education, with a staff, and the supervisor of physical education administer the health program. In all the elementary schools except three, two elementary-school buildings are assigned to one principal.

Local educational offering.—There are 4,103 high-school pupils enrolled with 159 teachers, and 11,033 elementary-school pupils enrolled with 338 teachers. The work of grades six, seven, and eight in the elementary schools is operating under a modified platoon plan for the upper elementary grades. This plan involves auditorium activities in which special attention is given to music appreciation and expression. An intensive program of curriculum revision has recently been developed. In the elementary schools, the assistant superintendent organized a subject-matter committee for each grade. The chairmen of these committees met as a group to integrate the whole elementary-school program. The same organization prevailed for the primary grades, under the immediate direction of the primary-school supervisor, who in turn conferred with the assistant superintendent. In the high schools the director of research and secondary education, in collaboration with the high-school principals, organized a social-studies key committee. This general committee integrated the work of social-studies subject-production committees, in which all social-studies teachers were included.

Extracurricular activities.—There are over one hundred clubs in four high schools. Activities range from languages to air-

craft; practically every hobby interest is represented. In the elementary schools, bands and orchestras occupy a prominent place in the music program. Many of the schools have uniformed bands.

Community contacts.—There is an active parent-teacher association in each school. An emergency education program under the Public Works Administration has shown a significant need for a broad program of adult education. This work was organized under the direction of the supervisor of industrial arts. The Museum of Fine Arts and History, through its exhibits, has provided contacts with local history and with foreign countries. The industrial plants of the city have been a source of first-hand experience for students, through excursions which have been planned in connection with school projects.

Use of instructional aids prior to this survey.—The responsibility for using visual aids was tacitly delegated to the school principals, who were unable to accomplish much because of the lack of budgetary support. Available equipment included seven 16-mm. projectors, six 35-mm. silent projectors, no 16-mm. sound projectors, one 35-mm. sound projector, seven reels of film, twenty screens, eighteen stereopticon lanterns, six opaque projectors, three film-slide projectors, 189 film strips, 4,996 slides, and nineteen radio-phonographs (in practically all schools).

Unless special building provisions are made for placing projectors in operation readily, the teachers find it too difficult to use the materials. There should be electrical outlets conveniently placed and provisions for darkening all rooms to be used for projection. Few schools in Evansville were adequately equipped. The high schools initiated a program of visual instruction in 1934. They appointed a visual-education committee in one school to plan the development of such a program in that school. There was practically no centralization of equipment or materials. As for training teachers in the use of instructional aids, there was no such provision. The excellent work with visual aids which was done was apparently the result of the teachers' own initiative. There was no attempt to correlate visual aids with courses of study. The survey here described was conducted with the cooperation of the visual-education committee, consisting of five elementary-school principals.

The Program of Audio-Visual Instruction

Preliminary preparations.—These include, first of all, training teachers in the effective use of audio-visual aids through a training course organized for principals, supervisors, and selected teachers from each school. At the outset, this will take the form of a short unit course. Concurrent with this course, a series of experimental film units should be initiated in each building, so that as members of the group come together there will be a pooling of actual experience. The preliminary training course should consider rapidly the nature of the various instructional aids, standards for selection, sources of materials, integration of these materials into the curriculum, techniques for administering the program throughout the school system, and teaching techniques.[20] During the summer, teachers should be encouraged to take professional training courses in this field.

Audio-visual materials must next be selected and integrated with the curriculum. As part of the teacher-training program it is recommended that all the teachers of a school cooperate in selecting audio-visual materials to integrate with the unit. They may preview and evaluate films in terms of recognized standards. Each school should take inventory of materials available in that school and catalog them in relation to the course of study.

New areas of instruction, such as adult education, photoplay appreciation, extracurricular activities, and the like, may be developed, and current curriculum offerings, such as elementary science, may be enriched. Films, equipment, and projection facilities should be provided.

Administrative, clerical, and mechanical services can be rendered by the present staff, since such persons are acquainted with the needs of the schools. The interest which the present staff derives from initiating the program will continue even when the wide extension of the program in the future necessitates the establishment of a special audio-visual instruction department. [The distribution of responsibilities for this service is described on a chart.]

Experimentation and study.—This step involves the same series of procedures as was described under the first step and should extend over an entire school year.

[20] See Section on Teaching Techniques, p. 109ff.

Extension of the audio-visual instruction program. Teacher training, selection and integration of materials, new areas of instruction, facilities for securing and projecting materials, and administrative assistance must all be considered in connection with extending the program.

In the final period, there should be ample provision for maintaining the services initiated in the other steps.

The most recent reports of the activities of city departments throughout the United States are contained in the 1937 issue of the *Visual Review,* published by the Society for Visual Education, Chicago, Ill. The reader is recommended to examine this bulletin for timely information regarding city administration.

Other reports on the work of city administrators have here been summarized and arranged in inverse chronological order, because the most recent is likely to be of greatest value.

Gregory, W. M. (Director, Educational Museum, Cleveland, Ohio, Public Schools) "The Services of a Central Department." *National Elementary Principal.* 13:175-84. June 1934.

Progressive education requires that children be provided with learning tools that impart life experiences with speed and accuracy. The use of modern learning tools, under the guidance of the teacher skilled in the technique of handling aids, shortens and clarifies the learning process.

The value of modern learning tools is pointed out in summaries of research already conducted. (See Chapter X of the Yearbook.)

Factors which determine the success or failure of learning aids are (1) correct technique (which teacher-training courses fail to give), (2) wise selection, either through experimentation, or by consideration of the principle that each visual aid must be an essential tool in learning, (3) purposeful organization, both by a system of filing and distribution, and by correlation with the curriculum, and (4) educational value, which cannot be afforded by the text alone.

Some central bureau, either in the museum or in the administrative building, should collect, organize, distribute, and repair visual materials. Teachers in collecting materials often resort to unevaluated free advertising matter.

The Educational Museum in Cleveland, for example, undertakes to supply pupils and teachers with illustrative materials that are carefully selected and organized as an effective aid to actual school work. The Museum endeavors to meet the objective requirements of each course of study, to obtain the type of material best suited to bring about the desired results, and to organize material to be used at the different grade levels.

Pictures, for instance, are arranged in sets and include only those that are dated, located, authoritative, accurate. They are printed in 8-by-10-inch size, about twenty-five in each set, a number suitable for one week's instruction. On the reverse of each picture is a study guide adapted for each grade with questions, a game or puzzle, a selected vocabulary, a check-up test, and an information paragraph.

Lantern-slide units are also arranged in sets of twenty-five and are accompanied by title sheets which suggest definite class uses. Many popular sets are loaned to a school for a whole semester. The study guides are also printed for slides and used in proper order during the lesson. There are 42,633 slide units supplied yearly.

Motion pictures and projectors are purchased by the Museum. The projectors are loaned to schools for a semester and the films loaned through a fixed schedule organized in advance. Five thousand films are used per month. The cost of each film varies from $10 to $20. Servicing is done through the Museum.

The economic aspect of the Cleveland Museum service is of interest. In 1920-21, 5,556 units circulated; in 1925-26, 17,332; in 1932-33, 156,045. The average turnover was, therefore, 22 times per unit per year.

In 1925, $23,013 was spent; in 1930, $44,838; in 1932, $15,793 (because of the depression). These figures represent a little more than half the total budget. The cost per unit (computed on the basis of the actual number of units circulated and the total budget) in 1925 was $1.22; in 1930, 41¢; in 1932, 8¢.

Whittinghill, W. W. (Asst. Director, Dept. of Visual Education, Detroit, Michigan, Schools) "Functions of a Central Visual Education Department." *National Elementary Principal.* 13:185. June 1934.

Although the set-up of a department varies with the size of the school system, cooperation is the keynote that determines a department's success or failure.

The duties of the director vary in different schools. He may have to supervise the proper use of visual-aid libraries throughout the school system. He may be the science teacher. Or, in addition to supervising the use of visual aids in the school system, he and his staff may make visual aids. Again, he may head a staff of ten or fifteen people who make and distribute aids but whose service ends there, with supervisors in each subject directing their use.

The Department of Visual Education in Detroit directs eleven definite programs: teacher training, the selection of visual aids, a film program, a slide program, an exhibit program, a photographic program, an equipment program, a delivery-service program, an equipment-service program, a phonograph-record program, a radio program.

The film program, for example, includes the review, by committees, of all films. Approved films are bought; some films are made by the department; a film library is stored, serviced, distributed. [See table for number of films used 1928-33 and the per cent of change.]

The selection of visual aids is made by a committee. In science, for example, the committee includes the director of science, the head of the science department in the school, two science teachers, and the city director of visual education. The committee decides which visual aids are particularly adapted to the curriculum, previews them, and makes recommendations. This type of selection when applied to all subjects in the curriculum results in a specialized library of visual aids that is of value to all teachers. The course of study includes visual aids to be used and how they may be obtained.

Request blanks for visual aids are filed with the department one semester in advance, after which the teacher is relieved of any further responsibility until he starts using the material.

There are 736 complete units of visual-education equipment in the Detroit schools. The equipment includes all types of projection apparatus. The Department services all equipment.

Among the research studies in which the Department cooperated are:

1. Proper objectives for a broad program of visual education.
2. Relative values, in a general program of instruction, of slides, still films, auditorium films, classroom films, exhibits, photographs, charts, maps, museum materials.
3. The degree of differentiation that should be made between visual aids used in the classroom and those used in the auditorium.
4. The degree to which visual education can be made a factor in improving local, national, and international relations.
5. Organization of a program of supervision accompanied by measurements of the use of visual aids.
6. Organization of state and city departments.
7. Exhibit standards.
8. Educational talking pictures.

Teacher training in the proper use of visual aids is in the hands of the department heads or supervisors, who in turn are members of the Department of Visual Education and cooperate with it. Training in the handling of equipment is carried on by the Department through demonstrations in the various schools.

Lain, Dolph (Director of Visual Education, Moline Public Schools, Moline, Illinois) "A Visual Education Department." *Illinois Teacher.* 20:7, 34. September 1931.

The Department of Visual Education in Moline was organized in 1923. Most of its service is conducted in the junior and senior high schools.

Visual aids include 16-mm. and 35-mm. films and some slides. Most instructors seem to prefer motion pictures to slides.

Selection.—Films edited only for school use are not abundant, but the supply is slowly increasing.

A card system for listing educational films is worked out as follows: A new catalog of films or slides is sent, on arrival, to the department head or to special teachers. The films or slides that they recommend are added to the card index. If after a trial the films are found to have little educational value, the

card is removed from the file. The list is, therefore, the result of trial and elimination.

Equipment.—Each junior and senior high school has one room reserved for projection work. The need for moving equipment from room to room is thus eliminated. However, as soon as teachers become skilled in the use of 16-mm. equipment, each classroom will be used for projection. This will make it possible for several teachers to use projection equipment at one time or for a teacher to show a few slides at one session without the necessity of moving her class.

There are two 35-mm. and three 16-mm. motion-picture projectors in the schools, and three stereopticon lanterns.

All the work in visual education below the junior high school level is done independently in each school.

The operators of equipment are boys in the school who receive special credit for their work. After September, 1931, the only films used will be 16-mm.

Sources of films and slides.—Films are rented from state universities, film agencies, and some industrial concerns. Slides are made or bought.

Haworth, Harry A. (Supervisor of Visual Education, Pasadena, Calif.) "Administration of a Department of Visual Instruction." *Junior-Senior High School Clearing House.* 5:218-22. December 1930.

The functions of the Pasadena Department of Visual Instruction are as follows: (1) To introduce the visual-instruction method to teachers and to assist them in the correct and economical use of this method. (2) To secure visual aids. (3) To organize visual aids in a scientific manner corresponding to the course of study. (4) To circulate these aids among schools.

[The set-up of this department is very much like that described by McClusky. (See p. 22) The duties of the director are especially in line with the suggestions outlined in that article.]

System of classification.—The Dewey decimal system for classifying subject matter is used wherever practicable. A letter preceding the number describes the type of visual aid

required: P (print), W (wall print), S (stereograph), L (lantern slides), S.F. (still film), Ex. (exhibits), R (roll film or film slides). Material for primary grades is marked "X."

Thirty-five-millimeter films are arranged according to the University of California catalog, and 16-mm. films alphabetically according to title. Details are worked out as the need arises.

Supervision of use made of visual aids.—All elementary-school teachers and all high-school teachers, according to their department of specialization, meet once each semester. At these conferences instruction is given in the operation of projection equipment, suggestions are made for the use of visual aids, and the new pictures available are exhibited.

Individual conferences are also arranged, and personal visits to the department are encouraged.

Sigman, James G. (Director of Visual Education, Philadelphia, Pa.) "The Organization of a Department of Visual Education." *Junior-Senior High School Clearing House.* 5:214-18. December 1930.

The official creation in 1929 of the visual-education department in Philadelphia was not the first step in visual education. Such activities as the distribution of slides were known as far back as 1905.

Organization of the Philadelphia department.—Close cooperation with special departments has been encouraged. Specialists in subject matter are consulted to insure the best correlation with the course of study. Busses have been provided by the Board of Education for the transportation of children to museums; trucks transport materials to one-fifth of the schools each day. Materials distributed include: 16-mm. film, 35-mm. film, still films, film slides, glass slides, stereographs, and historical prints.

Teacher training.—Teachers in service and undergraduates are given special training in visual education. The state director has sent out a syllabus to the teachers' colleges. A laboratory of equipment is maintained in the normal school. Frequent bulletins are sent to teachers. The director personally demonstrates visual methods in schools.

The personnel of this department consists of a director, special assistant in instructional field, five clerical assistants (a

chief assistant, a museum clerical assistant, a glass-slide clerk, a motion-picture clerk, a still-film clerk), three museum teachers permanently attached to the Commercial Museum and one assigned to the Art Museum, and three mechanical assistants and operators.

Roach, Charles (Director, Visual Education, Los Angeles Schools) "Visual Instruction Service in a City System: Abstract." *National Education Association Proceedings.* 67: 942-3. 1929.

Visual aids, including pictures, home-made charts, stereographs, and lantern slides, have been used generally since 1913. In 1920, a motion-picture service was added. The visual-education department should not be a subject department but a service bureau where teachers, principals, supervisors, and superintendents may come for assistance in visual problems.

In the Los Angeles system, the director of the department is subordinate to one of the eleven assistant school superintendents. There are three assistant directors and two teacher-assistants, all of whom are professionally trained, certificated, and hold teachers' credentials. The general administrative duties are distributed among them. The nonprofessional group consists of the usual clerical staff and six persons in specialized work, such as photography, art, and research.

The department is divided into several sections, each one of which is in charge of a head responsible to the director or to an assistant director. The photographic section prepares photographs and slides. In addition to a specially trained teacher-assistant, there are three photographers who work in the field or in the laboratory, a catalog clerk who prepares explanatory data to accompany and identify each illustration, and a file clerk who keeps the negatives, file prints, and card index in shape. The head of this section is the official photographer for the board of education.

The assembly section accepts the responsibility for all details of binding slides, mounting pictures, and labeling, boxing, and packing material prior to circulation. Repairs and replacements are made by this section.

The art section tints pictures and slides. The artist designs special posters or charts that are not otherwise obtainable.

The editorial and research section checks all printed and mimeographed data that accompany the illustrative material.

The division meets the teachers most intimately and most frequently in the circulation section. Everything other than motion pictures is stored, distributed, and returned by this section. The volume of business has increased to such a large extent that a clerk is now assigned to each grade to handle materials.

The motion-picture section is kept separate and distinct from the circulation section.

Recommendations to other directors of visual education:

1. Provide a means whereby teachers may learn methods of visual presentation before equipment is purchased.
2. If at all possible, establish a photographic section with the best equipment for making slides and photographic enlargements.
3. Analyze the film problem carefully. It is better to buy films than rent them.
4. Provide a delivery service with a definite schedule for all schools.
5. Tie all work positively and definitely to the course of study.

II. Administration Within a School Building

The administration of visual aids should be systematically organized for the city as a whole, and with equal emphasis, within each school. It is important that visual aids be routinized so as to minimize the demands upon the teachers, and to remove any factor of novelty or entertainment.

Hollinger, as city administrator, in the article summarized below, offers some worth-while suggestions for a system of administration within a school building.

Hamilton's suggestions are based on his long experience in dealing with schools as the representative of a visual aid producing company.

Hollinger, John A. (Director of Visual Education, Pittsburgh, Pa.) "The Administration of Visual Aids in Education." *American School and University.* 5:210-14. 1932-33.

For the effective use of visual aids in education, materials must be made conveniently available for teachers. Visual aids should not be confined to the assembly or extracurricular program but should be made an integral part of the classroom procedure.

Equipment for classroom use should be permanently located in the school building and cataloged and indexed so as to make it easily available. There should be (1) cabinets for slides and stereographs, (2) library shelves for motion-picture films (buy only slow-burning acetate film), (3) folders for flat pictures, (4) cases for specimens, charts, posters, and the like. A competent person should be in charge of materials and equipment. The school librarian is best fitted for such work. If there is no librarian, the principal and an assistant may take charge.

The duties of the director of visual education include (a) prompt distribution of material, (b) prompt return of material to proper storage place, (c) recording of material as it leaves the building and when it is returned, and (d) the appointment of a licensed operator for projection of 35-mm. film. The operator may be a teacher whose duties will be to supervise proper storage of equipment for protection against dust and theft, to repair breaks in films, to keep all projectors in working condition, to moisten regularly the humidor containers for films, and to instruct other teachers how to operate the machines.

Visual aids suitable for general instruction of a scientific, social historical, artistic, and vocational nature should be stored in the central office.

Most of the material should be owned by the district and distributed to the schools. The longer the range of a distribution system, the less effective and more expensive it is likely to become. There must be sufficient personnel and equipment for prompt and efficient service. It is best for schools to requisition material well in advance.

The space reserved for the visual-education department should include a general office, with telephones, a projection and conference room, about 15 by 30 feet, with lighting and darkening facilities, and at least 800 square feet for storage and work-

room. The department should be equipped with desks for the director and the booker, a cabinet for filing reservations, and files for catalogs, correspondence, and the like. There should also be a packer's desk, a receiver's desk, a rewinding table, and a patching outfit for films. Slides may be stored individually or in sets. Films may be kept in the containers in which they are shipped.

The minimum equipment as determined by the Pennsylvania state teachers' colleges, is available through Dr. C. F. Hoban, director of visual instruction, Harrisburg, Pennsylvania.

Each school should have the following projection equipment: One lantern-slide projector for each floor, one 16-mm. projector for every twenty classrooms, one 35-mm. projector for the auditorium, an outlet for each classroom, equipment for making slides, and a screen, from 30 by 40 inches to 6 by 8 feet. The screen can also be made from discarded window shades mounted on boards, or painted on a wall.

The equipment recommended for the auditorium includes a projection booth with control of all lights from the booth, a reverse signal system from stage to booth, a screen, 12 feet wide, on a rigid frame, and opaque shades for darkening the auditorium. A 1000-watt lamp is necessary for lighting, if the distance from the screen is not more than 70 feet, and a carbon-arc projector, if the distance is more.

An annual appropriation of $1 per pupil is needed for carrying out properly such a visual-aids program.

Hamilton, W. J. "Administrative Problems in Visual Education." *Educational Screen.* 15:208-10. September 1936.

Those who have been interested in the sale of visual aids have been quite successful in getting them into the schools. School administrators have not been so successful in getting them used. A check of visual aids shows that many of them are seldom or never used.

The correction of this situation rests with school administrators. The first step in an administrator's procedure for the systematic use of visual aids is a careful inventory of the visual aids which the school actually owns. This material should be carefully evaluated. Much of it may be found to be out of date or worn out.

An attempt should be made to secure school-wide use of such facilities as the school possesses. Materials should not be in the possession of any one room or department, but should be available for the use of the entire corps of teachers.

Teacher committees will be found useful in the adaptation of the aids to the courses and the curriculum in general. A definite time and place should be found for the use of such aids in the school work. The practice of appointing teachers to serve on committees for the evaluation and for the introduction of methods to be employed for the use of visual aids, will result in an intelligent interest in carrying out the recommendations made.

The visual aids should be made as convenient for use as possible. Regular classrooms may be fitted up for projection purposes and the schedule of classes arranged to accommodate those classes desiring to use the projector. The projector can be housed in a cabinet with all connections made and with screen, sound equipment, and other details carefully tested and ready for use.

Teachers should be trained in the operation of the projectors. This will result in an increase in the quality of projection, since projectors in untrained hands are often poorly used.

Visual aids may be used at various stages in the progress of a unit of work: for introduction to the unit, for example, study, discussion, or review. The use will vary according to the techniques employed and the nature of the subject matter being presented.

There should be a room in which visual aids may be stored, loaned for the use of individual teachers, and returned. A perpetual inventory may thus be kept and materials inspected and repaired. The larger systems should have a director in charge who devotes his entire time to visual aids.

In some places, state and county units of distribution have been developed for films, lantern slides, and so on. Local unit distribution is usually more satisfactory, making it possible to get the material on short notice.

School showings of films should be strictly educational, leaving the entertainment field to the local motion-picture exhibitors. The practice of booking educational films without regard to the units being studied and showing them to large groups is not to be recommended. It is better to select only

those films that are of interest to pupils at a certain grade level and correlate them with the regular work of the class.

A definite sum of money should be made available each year, in the regular budget, for visual aids. It is better to add equipment each year than to make a large sum of money available periodically for such purchase.

As a refutation of the statement made above regarding the use of films for large audiences, a number of educators have published accounts of a technique which they consider satisfactory in making the motion picture of interest to children, and occasionally to adults, assembled in large numbers.

Jones, A. H. (Director of Visual Education, Gary Public Schools, Ind.) "Visual Education in the Auditorium." *Visual Review.* 1930:17.

The visual education department includes three full-time teachers and two part-time administrators, one the supervisor of social sciences, and the other the assistant supervisor of art. The teachers go to all the schools in the city, transporting their motion picture and stereopticon equipment as they go. The topics chosen for the auditorium lecture-demonstrations are not correlated with the course of study, nor are they graded. This is done in order to provide enrichment of experiences outside of the regular classroom routine.

The films used in the auditorium are: some industrials, a health film, "One Scar or Many?" on vaccination, a safety film, one on the structure and care of the teeth, one on the food value of milk.

Besides this day school program, the department sponsors a community night program for every school center in the city.

The rental and purchase of films is provided for by a budget allowance of $4,000. The per capita cost on this amount is two and a half cents.

Stuart, Byron D. (Principal, Frand and Franklin Schools, Westfield, N.J.) "On the Use of Motion Pictures: Seven Years Experience Summarized." *New Jersey Educational Review.* 8:23. March 1935.

The classroom teachers requisition those slides and films which they will use for the forthcoming year. The principal

consolidates these plans to arrange a full schedule spread out evenly over the year. The films and slides are shown in the auditorium before the fourth, fifth, and sixth grade students.

The visual instruction period is looked upon as a genuine study period. This is emphasized to the pupils, not only directly by the teacher, but indirectly through follow-up tests and group discussions which follow the showing. A pupil or several pupils are given the responsibility of explaining in advance the background of information necessary better to understand the film. When slides are shown, a pupil is made responsible for the thorough explanation of one or more slides. On other occasions the school nurse, the dentist, the supervisor, the principal, or the teacher explains the picture in such a way as to make it more valuable.

Meola, L. K. (Chairman, Visual Education, John Hay High School, Cleveland, Ohio) "Noon Movies—the New Educational Tool." *Educational Screen.* 14:224-7. October 1935.

Students are shown two reels of film per day, or ten reels per week. A feature film is run in serial fashion. The charge made is one cent per reel. The funds collected from this enterprise have paid for a sound equipment unit in the auditorium, a two channel public address system with a loud speaker in every classroom and office, and microphone outlets in six vital places in the building, as well as expenses to send school teams in Stenography, Typing and Bookkeeping to state and national contests.

All films produced by leading motion picture producers are available to schools provided they comply with certain very lenient regulations. Film programs are rented weekly, and the average cost is $3.00 per reel. Selection is based on the Film Estimates and on advice of the distributors. Student and faculty recommendations are also followed.

Some of the most outstanding films of the year are shown. Those only are excluded which contain gruesome or risqué scenes. Some of the features are light, musical and recreational, while others are more serious.

Application of the noon movies to classroom work is done directly and indirectly. The direct application is in the six weeks' course in motion picture appreciation offered as part of the 11A English course. The noon movie feature is the laboratory for discussion in this class. The fact that only two

reels are shown daily helps greatly in the discussion. Good practice is afforded in rating films. Students in this class make recommendations to the program director for films they would like to have shown in schools. English students use the textbook, *How to Appreciate Motion Pictures* by Edgar Dale.

The indirect tie-up comes in the application of the film contents to science, dramatics, oral English, art, home economics, music, etc.

The House of Rothschild, for example, presented a concrete illustration of "family shield" which was mentioned in the Idylls of the King. Economics and business training classes found much valuable material in that film. Political science was clearly portrayed by the Napoleonic wars, tax collectors, religious oppression, court scenes. The home economics group and the art group found interesting information in the same film, as did the physics students through the phenomenon of Technicolor. The drama students and oral English students were delighted with George Arliss and the other members of the cast.

The Barretts of Wimpole Street was also used to correlate school work with this recreational experience. Browning's poetry, the story of his life and of that of Elizabeth Barrett were studied. The characterizations, costume, furnishings and many other details were enjoyed by students of home economics, oral English and dramatics.

One significant outcome of these noon movies appears to be a realization of the extensive research necessary to make a great picture play.

The social values of this program are many. The students conduct themselves properly, eliminating the need for discipline. Surely there will result a discriminating taste in motion pictures, and a desire for guidance.

Swarthout, Walter E. (Emerson School, Maywood, Ill.) "Recreational Motion Pictures in the School." *Educational Screen.* 14:978. April 1935.

The assembly program of films was developed after a 35mm. projector had been purchased by the Parent-Teachers Association. The children contributed from 10 to 20 cents for the semester. A program of fifteen units to be shown twice a

month was worked out, and each shown in two assemblies; one assembly for the lower grades and one for the higher grades. Appropriate pictures were shown in each case.

Another phase of the motion picture program was purely for the purpose of developing a better taste in children for motion pictures. An admission charge of ten cents brought in enough money to pay for the rental of films and equipment, and finally for the purchase of sound attachments for the projector.

Collier, Robert, Jr. (Chemistry Department, South High School, Denver) "The Preparation and Presentation of a Science Night Program." *Educational Screen.* 14:219-22. October 1935.

The Science Nights in this school were intended to "sell the school" to the community. They were planned well in advance and much publicity prepared. The art department, the mechanical drawing classes, news writing classes all aided in this phase of the program. Definite plans were formulated regarding traffic and seating of visitors.

The chief departments cooperating in the exhibits were the Art, Biology, Astronomy, Mathematics, Physics, Psychology, Chemistry, Latin, Library, Home Economics, News-writing, and several extra-curricular groups. Each department was given exhibit space and students were encouraged to demonstrate material whenever possible.

The Biology Department displayed microscopic collections, interesting pets, flower collections, and the like.

The Mathematics Department displayed demonstrations on the slide rule, use of Pantagraphs and manipulation of Napiers rods.

The Astronomy Department constructed a Reflecting Telescope, the only one of its kind in the city. An exhibit of sky charts, models of the solar system, and charts on the phases of the moon were also shown.

The psychology of a necktie was one exhibit which caused a great deal of comment.

The Physics Department showed Black Light, Neon tubes, automatic telephones and switchboards, modern air conditioning of rooms, and numerous others.

The Library contributed to every department by its display of books and reference materials.

The Chemistry Department displayed 156 exhibits ranging from chemistry involved in tooth powders and cosmetics to a continuous demonstration of the effects of liquid air. Exhibits were limited only by student participation, rather than by lack of possibilities.

The Home Economics Department arranged an attractive exhibit on "Consumer Education." This included discussion of the value of various breakfast foods, showing slack fills and mislabeling; samples of foods containing high and low food values and comparative costs; a demonstration on vitamins; samples of silk hose were compared; the effect of various soaps on textiles as well as methods for removing stains from these textiles were shown. This training in proper buying is very helpful for the students and their families.

The Latin Department displayed miniatures of Roman furniture, war implements, and bridges and a chart on Latin derivations in the English language.

In addition to these exhibits, there were several of a more or less "recreational" value. The school orchestra played concert music in the auditorium. Before and after the concert *the film* "Eyes of Science" was shown. A teacher demonstrated various phenomena of High Tension Electricity. A glass blower from the Denver Fire Clay Company gave a demonstration of his skill.

A hobby show was also arranged, revealing interests which had no connection with school work.

Although this type of program requires a great deal of time and effort in preparation, it is felt that this is justified by the satisfaction shown by the taxpayers.

The following summaries will indicate varying techniques of school administration by principals. They offer many helpful suggestions.

Snyder, Elmer W. (Principal, John Marshall High School, Rochester, N.Y.) and **Evaul, Clarence B.** (Head of the Department of Science) "Administering Visual-Audio Aids in a High School." *New York State Education.* 24:616-17. May 1937.

The John Marshall High School has a central sound system as well as equipment for 16mm. motion picture, stereopticon,

and opaque projection. In order to encourage and distribute the use of this equipment, a service bureau was organized among the pupils under the direct supervision of a member of the faculty.

The principal duties of the service bureau may be classified as follows:

1. Radio Service
   a) Furnish operators for the central system
   b) Furnish operators for the portable system
   c) Care for equipment
   d) Maintain a radio bulletin board
2. Visual Service
   a) Furnish operators for all visual equipment
   b) Operate equipment for assembly and stage presentations
3. Photographic Service
   a) Furnish photographers for school events
   b) Photograph school activities
   c) Make lantern slides for classroom and assembly use.

Faculty members are requested to file a request card for materials, after consulting the lists of films and slides placed on bulletin boards and in departmental offices. As soon as the material arrives, the teacher is notified and a pupil operator is assigned.

The boys assigned to the service bureau have benefited by their training and have been eager to continue as members of the squad.

Smith, Harvey N. (Abraham Lincoln High School, New York City) "Organizing the Visual Instruction Program." *High Points.* 13:40-4. November 1931.

A visual-instruction division has been organized in the Abraham Lincoln High School and placed under the direction of one teacher. A series of demonstration meetings for teachers held twice a month enables each teacher to learn the mechanics of visual instruction. The division assists and cooperates with the various departments using visual aids by facilitating the use and distribution of equipment and by collecting and classifying information concerning the material.

An "optical squad" of nine boys has been organized which delivers the projection machine to the classroom. The teacher.

however, does the actual mechanical work. Consignment cards that each user must fill out describe the time and place of use.

Requisitions are called for at the beginning of the school term. Each department is asked to keep a list of the visual materials suited to its use.

A central bureau of visual education for secondary schools is planned, similar to the one for elementary schools.

Gross, Ella (Principal, Public School 133, Brooklyn, N.Y.) "Making Aids Available Within the School." *National Elementary Principal.* 13:171-4. June 1934.

The plan followed by this school insures the use of all available visual aids at the time they are most needed. The school made an analysis of the course of study it was offering in all subjects, for all grades, and compared the analysis with the material available from the American Museum of Natural History.

Preparing card indexes.—The term plans for each grade were arranged by weeks. On Set A index cards, the work required for each week in each subject was listed; e.g., Nature study: first week in Grade 1 called for "seasonal changes"; Grade 2, "seasonal changes"; Grade 3, "seasonal changes"; Grade 4, "seasonal changes"; Grade 5, "household insects"; Grade 6 "seasonal changes—eclipse, equinox," and so on. An analysis of the catalog provided by the American Museum of Natural History showed that one set of slides, entitled "The Seasons," was suitable for fourth-grade nature study. This material was then listed on cards for Set B. The Set B cards were then placed behind the cards in Set A. By this arrangement the fourth-grade nature-study unit for the first week was enriched by the set of slides in the Museum.

Preparing the school program.—The school program is carefully cataloged and scheduled at the beginning of the school year. This schedule is posted on every floor of the building for ready reference. The teacher then knows the exact nature of the material and the exact time of delivery (which is usually one day in advance). The schedule for the use of projection equipment is also posted, so the principal may know who is using the machines in each class period.

Distributing aids and equipment.—For each piece of material there is a card listing in order the names of the various teachers in the school who are going to use it. The monitors who deliver the material then know the route to follow. The material is returned to the principal's office when all the teachers listed on the card have used it.

Two months before the end of each term, another requisition is made out, based on the criticisms and recommendations of teachers. Some of the materials are then eliminated and others substituted.

McMillan, J. G. (Tulare Union High School, California) "The Routine of Motion Pictures in a High School." *Educational Screen.* 5:463-4. October 1926.

At the beginning of the school year, the teachers are invited to indicate on request blanks the films they will want to use. Catalogs of films are on file in the school library for inspection. [Although there are catalogs from many organizations, the author prefers to deal with one source.]

A committee of three faculty members assembles the request blanks and adjusts the list to equalize distribution among the departments. A schedule is made on the basis of one "picture day" a week. The tentative schedule is presented to teachers and then to the principal. The extension division of the university then receives this list and returns it to the school when the films have been checked.

On the "picture day," classes are directed to the auditorium where film showings take place, according to the schedule.

Chambers, Elsie I. (Dept. of Visual Education, Huntington Beach Schools, California) "Are You Interested in Visual Education?" *Educational Screen.* 12:122-3. May 1933.

Visual education is a new field in name only. Visual aids have been used for many years, but it is now evident that to be really effective they must be used more scientifically.

The supervisor selects equipment, gives demonstrations, prepares exhibits, and trains teachers.

"Visual work, to be most effective, should have an allotted period on the program of every classroom and these periods should be as strictly observed as periods of any subject in the curriculum."

Rules for teachers: (1) Keep all equipment clean, attractive, up-to-date, and in good condition. (2) Prepare the class for the lesson, or correlate the film with the text lesson. (3) Rooms should be darkened and well ventilated, machines and chairs arranged properly. (4) Choose still pictures and charts of good quality (show few illustrations in one lesson.) (5) Use models, exhibits, and the like, as tools for physical education, social science, and vocational subjects. (6) Organize a form of activity (film strip, dolls, modeling, and so forth) which will emanate from a film lesson. (7) Take students on field trips whenever possible.

Hoek, Floyd G. (Principal, Longfellow School, Teaneck, N.J.) "Organizing the Visual Instruction Program." *Visual Instruction News.* 4:11-12. March 1931.

Definite advance planning of the visual aids to be used during the year facilitates the work in this school. After the films or slides have been selected for the year, the schedule is verified by the producers or distributors. Mimeographed copies of the schedule are then distributed to all the teachers in the school. Lesson plans and synopses of films, when provided, are given to the teachers well in advance of showing dates. Posting of the complete schedule of films has caused a noticeable increase in the use of the library prior to the showing of certain films.

Appropriate music played during the showing of historical films apparently augments the effectiveness of the picture.

The following school program was especially fitted to the objectives of a school for deaf children.

Hester, M. S. "A Program of Visual Education for a Residential School." *Volta Review.* 34:503-6. October 1932.

This program for visual education is based on the results of the following studies: (a) A survey by Mimi Fandrei in which many schools report using their visual equipment for entertainment purposes rather than for classroom work. (b) A study in which advertising films were found to be less desirable than strictly educational films for which supplementary guides are furnished. A textbook plus a film also appeared to be more effective than the text alone.

The Iowa School for the Deaf used films for geography, history, hygiene, and science with interesting results. The films were shown to two classes, one of average intelligence, the other of less than average intelligence. At the end of a unit, a test was given to both classes.

Type of Lesson	Test Results	
	Slow class	Average class
No film at all.....	Poor	Average
Film, with adequate preparation	Average	Excellent
Film, no preparation	Poor	Average

This school is also active in making amateur films. Films designed for lip reading are already available. The school also recommends slides, stereographs, and models as visual aids. A course for teachers on techniques for using visual aids is urged.

A program for schools of the deaf.—A supervisor is selected. He collects literature on the subject and studies equipment and methods. His task is to organize and distribute materials for the school and to instruct teachers on methods. The following equipment is purchased: a 16-mm. projector and screen (a 35-mm. projector might also be secured); a lantern-slide projector or a combination with opaque projector; charts, maps, models, a set of slides, stereographs and stereoscopes. A 16-mm. movie camera for making films is also worth considering. A place is allocated for storage. A catalog of the visual aids in the school is sent to all teachers. The supervisor makes a list of all free exhibit material that is furnished by manufacturers.

III. Systems for Filing and Cataloging

The section that follows should be serviceable, especially to the administrator who is setting up a system of organizing and distributing materials. The articles included here give concrete suggestions for filing, mounting, and cataloging materials. Klein's system is being used in the United States Government departments. It applies to extensive depart-

ments. Dick, speaking from the point of view of a librarian, offers some worth-while methods for cataloging.

Klein, Margaret A. (Director, Children's Bureau, U. S. Dept. of Labor, Washington, D.C.) "A Filing System for Visual Aids." *Educational Screen.* 12:103-4, 128-9, 161-2. April, May, June 1933.

This article describes a system used by Government departments for filing visual materials. Much of the work is based on multicolored cards for filing different types of material in different sections.

The *distribution file* furnishes a record of shipments, a check on materials on loan, a history of material distributed during the year. The cards in this file, salmon-colored, are divided into five sections:

1. "Send" section (31 blue guide cards for each day of the month). Behind each guide card are cards for the people material is to be shipped to.
2. "Out" section (26 blue guide cards lettered A to Z). After the material has been shipped, the card is transferred from the "send" to the "out" section.
3. "Closed" section. After the material has been returned, the card is transferred from the "out" to the "closed" section for the year, thus affording a record of that year's work.
4. "Tentative" section, where requests pending further notice are placed. These cards eventually reach the "send" section (No. 1).
5. "Future" section, in which shipments of a future date, often months in advance, are noted.

The reverse side of each card is used to record information such as use of material, attendance at showing, criticisms, and so on.

The *stock file* has as many divisions as there are types of materials. Salmon-colored guide cards separate the divisions; blue guide cards the subdivisions. Each piece of material has its own record card, such as the one illustrated below.

The material available for loan may readily be seen by this system.

The *information file* contains the card-information (a card index of the names of firms and the equipment they sell) and

Motion-Picture Division

"Diet" Bought, May, 1930		No. 14
Lent to:	Date,	Returned
Gray	5/31/30	Ret.-Ex.-O.K.*
Brown	5/16/30	Ret.-Ex.-O.K.
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*Returned, Examined, O.K.

the materials information (a file of circulars and catalogs of equipment). The cards are classified as to the type of material, with subheadings; for example, "Lantern slides, for geography, of France." A list of appropriate headings can easily be made up to fit the particular need of the system.

The *photographic file* is a vertical file in which the photographs and negatives are kept. One print is mounted on a guide card at the top of which is the title, number, and so on. Behind each guide card are additional copies of the photograph in an envelope, and the negative in another envelope. A caption should be printed on the back of each photograph.

Dick, Grace I. (Librarian, Board of Education, Pasadena, California, Schools) "A New Opportunity for Librarians." *Library Journal.* 58:772-3. October 1, 1933.

This article describes, briefly but adequately, a practical plan for cataloging visual aids by means of the Dewey decimal system, which has proved so effective with books. Call numbers identify the type of material. The numerals are used as with books, i.e., 973.4-6, the -6 being the accession number.

Six types of cards are needed for filing and charging visual aids. These are the title card, the subject card, the artist or producer card, the charging card, the visual-aid request card, and the shelf-list card.

By this method it is comparatively easy for a librarian to determine what material is available for a given subject or by

a given artist or producer, and which materials are in circulation. Subject headings are used according to the American Library Association, or the Library of Congress. The descriptive note for each visual aid should be repeated on each card. [For sample entries, see article.]

Ireland, N. O. *Picture File in School, College and Public Libraries.* The F. W. Faxon Co. Boston. 1935. 89p.

The purpose of this book is to aid librarians in organizing a picture file. The chapter headings are: How to Begin; Mounting; Picture Headings; Storage and Circulation; Uses and Publicity. More than half the book is devoted to a list of picture headings, beginning with "abbeys" and ending with "zodiac."

The section by English and Stratemeyer in the Eighth Yearbook of the Department of Supervisors and Directors of Instruction of the National Education Association is notably one written by and for supervisors. The writers give directions for making storage equipment as part of the program of "organizing and caring for materials."

English, Mildred and **Stratemeyer, Florence B.** "Selection and Organization of Materials of Instruction." *Materials of Instruction.* Dept. of Supervisors and Directors of Instruction, N. E. A. Bureau of Publications, Teachers College, Columbia University. 8:129-48. 1935.

This article discusses the development of a materials bureau. Such a bureau may be a part of a central bureau for the school system, which may be located in the superintendent's office or in the office of some other designated person; or it may be in a school, under the direction of the librarian or a committee of teachers; or in the classroom, in the form of a collection in the hands of the students.

The writer offers many helpful suggestions for the organization and care of materials. The filing system may be based on that in the *American Library Economy,* published by The H. W. Wilson Company, or on Knox's classifications. There should be one card file of authors' names, one card file by subject, and a vertical information file using the Dewey decimal system

of classification, e.g., D—Transportation; D_1—Transportation, boats; D_2—Transportation, trains, and so on. All material relating to Transportation is then placed in folders marked to correspond with the cards in the subject file.

The writer devotes a section to some very valuable suggestions for mounting and preserving material.

We note here the sections of Rose Knox's book, *School Activities and Equipment,* that may have some implications for visual-education administrators.

Knox, Rose B. *School Activities and Equipment: A Guide to Materials and Equipment for Elementary Schools.* Houghton Mifflin Co. Boston. 1927. 386p.

This book is one of the earliest on the activity program and contains concrete suggestions for securing and organizing materials of instruction. No special reference is made, however, to visual materials. The sections listed below might be pertinent:

"School Pictures," (still and screen), p. 229-55; "Problems Growing out of Materials and Equipment," (chapter 9)—especially the suggestions for the use and distribution of materials.

IV. Administration for a State

The services of state visual-education departments have been analyzed and summarized by Dunn and Schneider.

Dunn, Fannie W. and **Schneider, Etta.** "Activities of State Visual Education Agencies in the United States." *Educational Screen.* 14:99-100, 126-7, 158-61. April, May, June 1935.

Some form of state provision of visual materials has been reported from twenty-six states. The agency most often undertaking the service appears to be the extension division of the state university or of the state college of agriculture as indicated in the following list:[1]

[1] Univ. of Georgia, Macon; Univ. of Michigan, Ann Arbor; and Univ. of Vermont, Burlington have inaugurated a state-wide service since the publication of this report.

University of Arizona, Tucson.
University of California, Berkeley.
University of Colorado, Boulder.
University of Florida, Gainesville.
Indiana University, Bloomington.
University of Iowa, Iowa City.
Iowa State College of Agriculture and Mechanical Arts, Ames.
University of Kansas, Lawrence.
University of Minnesota, Minneapolis.
University of Missouri, Columbia.
North Dakota Agricultural College, Fargo.
University of Oklahoma, Norman.
Oregon State System of Higher Education, Corvallis.
University of South Dakota, Vermillion.
University of Texas, Austin.
University of Wisconsin, Madison.
Washington State College, Pullman.

State departments of education that undertake the service of distributing visual aids are as follows:

Massachusetts Dept. of Education, Boston.
Education Dept., University of the State of New York, Albany.
Ohio State Department of Education, Columbus.
Commonwealth of Pennsylvania, Harrisburg.

The New Jersey State Museum, under the Department of Conservation and Development, Trenton, distributes visual aids as a library lends books.

The University of Illinois High School at Urbana has a unique cooperative plan and acts as the agency for the state.

Brigham Young University, Provo, Utah, is the visual-education center for the state. This is a privately controlled institution.

Indiana and Pennsylvania state teachers' colleges, and that of San Francisco, California, distribute visual aids among their students.

Nature and extent of state services.—Departments of visual education have two general purposes: (1) to furnish instructional materials for classrooms, (2) to furnish entertainment for community groups.

Material commonly distributed: glass slides, film slides, pictures and prints, still films, stereographs, motion pictures (16-mm. and 35-mm.). The most widely used are glass slides and film slides. Sixteen-millimeter films are increasingly preferred to the 35-mm. size. Sound films, although not generally distributed, are growing in supply.

States differ in the ways in which they assist teachers in the selection of material. Some issue catalogs and supplementary bulletins or even give personal supervision. The usefulness of catalogs depends upon the care with which the materials included were selected, classified, and annotated.

Films intended primarily for teaching purposes are called "strictly educational," and those issued for advertising purposes are called "industrial." Since the advertising films are usually free, they are extensively used. The Ohio State Department of Education takes a strong stand against the use of such films, while the University of Kentucky distributes them almost exclusively.

The Universities of Missouri and Kansas designate strictly educational films and industrial films by separate categories.

States aid teachers to select cataloged aids by distinguishing strictly educational from industrial films (Universities of Oklahoma, Colorado, Missouri, Iowa, Minnesota, and Kansas, North Dakota Agricultural College, and Brigham Young University), by annotations in the catalogs (best are from the Universities of Texas and Wisconsin, and Indiana University), by organization according to subject matter (University of Arizona and Ohio State Department of Education), and by information in teachers' manuals (University of Wisconsin and Indiana University).

The amount and type of material supplied vary according to the budgets of the different departments. Some departments, however, with comparatively small funds available are able to supply a large amount of material. This is done by cooperative planning.

The Illinois cooperative plan, for example, was developed at the state university under Dr. R. T. Gregg, assistant principal of the University High School.[2] Member schools pay $5 per year and contribute one 16-mm. teaching film to the library. This entitles the school to use of the 16-mm. films and glass slides

[2] Cooperative libraries have been established at Syracuse University, and Mississippi and Arkansas are planning similar projects.

for two years. At the beginning of the second year of the plan, there were 150 reels of film available to member schools.

The state universities of Kansas and Colorado have pooled their resources and extended their service to other states as well. For a flat fee, schools in any state near by may avail themselves of the materials in both libraries.

Costs to borrower. The Universities of Florida and the New York State Department of Visual Education offer free service. Only slides, however, are distributed. The New Jersey State Museum distributes all its visual aids to the schools of that state without cost. Free service for industrial films only is offered by the University of Kentucky and the University of Minnesota.

A low annual registration charge for industrial films is made by the Universities of Texas, Oklahoma, Arizona, North Dakota Agricultural College, and the Oregon State Department. These institutions also permit individual orders. The University of South Dakota makes a "per week" stipulation instead of the "per day" regulation of the other departments.

Among films termed "rental," there are several types: (a) industrial films that have had to be procured by purchase, rather than by donation, (b) theatrical films that have been edited and transposed to the 16-mm. size for school use, (c) strictly educational films, such as Yale Chronicles, DeVry Films, and the like. Educational films are usually accompanied by teachers' guides. The Yale Chronicles and some others are lent by the day.

The Universities of Colorado, Kansas, Minnesota, and Missouri charge flat annual registration fees for the use of all visual aids. Iowa State College, the Universities of California and Texas, and Indiana University rent sound films at about $2 a day. The Universities of Iowa and Minnesota distribute the physical science sound films made at the University of Chicago.

Services other than the distribution of visual aids.—Some state departments offer helpful catalog arrangements. Seventeen of the departments issue catalogs of visual aids, but some catalogs are more carefully arranged than others. Visual aids may be organized alphabetically, or classified as to source or subject matter. Other departments offer advisory service in the purchase of equipment.

Handbooks of visual instruction are issued by the following: Iowa State College, New York State Visual Instruction Division, Ohio State Department of Education, University of Wisconsin, Commonwealth of Pennsylvania, and Brigham Young University (E. C. Dent, *Handbook of Visual Instruction.*) Classroom guides are usually compiled by the producer of the film. Glass slides are more often accompanied by teachers' guides than are films.

The department in Pennsylvania distributes monographs. New York State distributes lesson units, listing the slides that may be borrowed to supplement the teaching. Iowa State College issues mimeographs on the various phases of visual education, sources, recent developments, and so forth.

Teacher-training courses are being given by many colleges and universities and have been made compulsory for teachers in the State of Pennsylvania.

The article by Abrams, which follows, indicates the type of supervision which a State director of visual instruction offers to teachers in the schools.

Abrams, Alfred W. (Former director of the Visual Education Division, New York State Education Dept.) "Administration and Supervision of Visual Instruction." *New York State Education.* 19:558-62. March 1932.

Some practical pointers for supervisors and administrators are as follows:

Use care in the purchase of equipment. Compare various types before selecting. See that new school buildings make provision for projection equipment, electrical outlets, and so on. All equipment in schools should be properly conditioned, and teachers should be given adequate instruction in the handling of equipment.

Further suggestions result from a personal visit to numerous schools in the state:

Stand at the screen and depend upon a pupil to operate the lantern. To concentrate the attention of the entire class quickly upon the feature to be observed, it is frequently advantageous for the teacher to point to the screen. Otherwise some of the pupils will not see the feature until too late. Furthermore

there is an advantage in having pupil and teacher face each other.

Make an adequate study of the picture before presenting it to a class. Be able to recognize the picture when it is projected without referring to its title.

Analyze the picture in an orderly way. A picture cannot be seen as a whole. Each feature should be observed separately. Usually there is a major center of interest to which subordinate features are related.

Use the picture so as to contribute directly to the development of the day's lesson. Do not ask "What does this picture show," and do not encourage pupils to report everything they see in the picture. Pupils should learn to select what is pertinent to the problem under consideration just as they learn to select in their reading.

Lead pupils to determine from observation what the picture represents. Giving pupils verbal information is of less value than leading them to observe for themselves.

Avoid using too many pictures at one time. Otherwise the exercise is likely to be only a picture show.

Use pictures as an early, direct means of instruction, rather than at relatively long and irregular intervals for review.

Make questions specific and require definite answers.

Expect pupils to give reasons and to draw conclusions, but first be certain they have clearly and definitely perceived the objective facts represented by the picture.

Lead pupils to discuss the pictures freely and fully. As opportunity is offered, call upon pupils to make simple drawings on paper or at the blackboard; for example, let them indicate the position of an object or place relative to something else, or let them draw an oblique line to show the steepness of the slope of a mountain.

Use the observation and discussion of pictures to motivate topical reading and the use of reference books. Have pupils make use of the textbook for reference when the lantern exercise is in progress. For such work the overhead lights can be turned on temporarily.

Work with pupils in preparing a topical outline of what has been learned from a picture or groups of pictures. Make the lantern work, so far as possible, a study exercise.

Abrams, Alfred W. "The Relation of a State Bureau to the School Systems." *Visual Instruction News.* 5:13. March 1932.

By preparing pictures and directing their use, a state bureau of visual instruction may accomplish results that are impossible if the selection and use of pictures are left entirely to individual schools or to school systems. All slides in the Visual Instruction Division of New York are made from state-owned negatives selected by high standards for significance, authenticity, truthfulness, and attractiveness.

When a single state bureau supplies visual aids to the schools and educational organizations of the state, the cost is much less, in proportion to use, than when the visual aids are owned by individual organizations.

The New York State Division now makes the possession of standard classroom equipment—lantern, screen, and suitable stand—a condition of loan in the case of most of the slides it furnishes. Teaching notes are furnished. No rental charge is made for this service.

The growing need for cooperation within a state is perceptible from the Massachusetts report of a cooperative plan for the purchase of films and, in a different way, from the incorporation of two separate services in the state of Oregon into one well-organized center.

Burt, U. S. (Director of Visual Education, Oregon State College) "Unified Department of Visual Instruction." *Educational Screen.* 12:39. February 1933.

The visual-education service of Oregon, formerly divided between the Oregon State College at Corvallis and the University of Oregon, was centralized in 1933 at the Oregon State College. All visual-aid material may now be obtained from the single office at Corvallis. "A more complete service at less cost to the user as well as more economical to the tax payers is possible through this combination plan." [The article continues with a detailed summary of this service.]

"Educational Film Library Planned." *Educational Screen.* 13: 252. November 1934.

A cooperative plan for the purchase of films is being considered by the Massachusetts schools. The plan was formulated

by Chester F. Prothero, chairman of the Visual Education Committee, Beaver County Day School.

Each of forty schools is to invest $24, yielding $960 for the purchase of teaching films. The films are to be deposited in a centrally located office. A total of forty films would allow one film to each school each week. A week's period is desirable because it permits the use of the film by several classes in the school. The membership rate would apply for one year. Subsequent rates would depend upon whether other films were to be purchased, or whether only the handling expense for the original forty films would have to be covered.

Fox, F. Wilcken (Secretary, Bureau of Visual Instruction, Brigham Young University, Provo, Utah) "A Wide Area Visual Instruction Service." *Educational Screen.* 14:252-4. November 1935.

This article describes the origin and development of the visual-instruction service in the privately endowed Brigham Young University. Since its inception in 1932-33, the office has added to its staff and to its collection and is planning a more effective distribution of materials.

The Bureau has realized the need for good instructional films and is attempting to solve the problem in a small way by experimenting with original films made on the campus.

Kooser, H. L. "Visual Instruction—Iowa State College." *Educational Screen.* 15:241-2. October 1936.

The visual-instruction department of Iowa State College is aided in its work throughout the state by a similar department in the Extension Division of the University of Iowa, Iowa City.

A department such as that at Iowa State College has several well-defined objectives which may be listed as follows: (1) selection and preparation of visual aids; (2) distribution of visual aids; (3) maintenance; (4) aid in developing the proper procedure in using visual aids; (5) preparation of materials incident to the established program of visual aids and information on projection equipment.

Those visual aids such as sound and silent motion pictures, glass slides, and similar materials which lend themselves to physical distribution through a central agency, are included in the department library. The splendid quality of 16-mm. educa-

tional films now available has greatly aided in the process of selecting films which may be coordinated with courses of study. The department has large collections of glass slides definitely related to the curriculum.

All material is circulated on requests for use at a particular time. Nearly all orders are sent direct to the borrower from headquarters. Occasionally a subject will be sent from one person to another. Although this saves time in transit, it does not give the department an opportunity to check the film and determine its physical condition. The effort is to arrange the schedules so that subjects arrive in advance of the date on which they are to be used, so that there will be opportunity to arrange for their use in the most effective manner. Whenever possible, the material is left for a sufficient length of time so the school can use it most efficiently. The extension of the booking period contributes to more efficient use.

Guides are available to accompany many of the department's better films. These are sent out for the use of the teachers. In cases where guides have not been prepared, the department has made up some material which will at least give the exhibitor an idea in advance of what the films contain.

The department supplies films to groups other than schools, such as garden clubs, individuals, parent-teacher association groups, luncheon clubs, and the like. A printed catalog is distributed every two years. A mimeographed supplement is issued in each intervening year.

A great deal of film damage can be eliminated by educating those who use films to take proper care of them. The department has been carrying on a campaign to develop more careful handling of films.

The department considers it a part of its responsibility to train teachers in the classroom use of films. Some of this can be done at state and district teachers' meetings. "We also do considerable correspondence and have prepared some material which we believe is of value. We have not thus far instituted courses in visual aids, but we are working toward this gradually.

"We have many letters asking advice in buying projection equipment. We must, of course, be entirely neutral in our replies. We always go into the problem carefully, pointing out details of each projector, and suggesting that demonstrations be secured."

The plan described in the article by Noble is a broad and most extensive one, under which the state administration of visual aids will be made to serve each school in the country with maximum efficiency.

Noble, Lorraine (American Council on Education) "Distribution—An Aid to Visual Aids." *Educational Screen.* 15: 176-7. June 1936.

There is need for strengthening and coordinating the various state and university motion picture distributing services in order that all schools may be able to secure films with minimum waste of effort. One of the possibilities is to extend film centers to reach teacher-training institutions, other state universities, state and public libraries with an equitable sharing of responsibility.

There are three types of educational films which schools are called upon to use: first, those that a school should have on hand at all times, for reference and daily class work; second, those used as "background," and borrowed from time to time from a more distant distribution point or from a local film library or depository; and finally, current films that should move rapidly through the schools, as for instance, films of special interest, current events, holiday films, etc.

A state distributing center, after securing a motion picture would make it known to the various teacher-training institutions within that state. Demonstrations and other cooperative service might be offered to individual teachers. In a large city school system the center for information and advice would be the city film library. County units might develop a cooperative scheme for purchasing projectors and films.

Perhaps the greatest advantage to be derived from a network of educational film distributing units is that the service would be of, by, and for the schools, familiar with their needs and with immediate entrée therein. A state department or university would also have financial responsibility throughout the field, both for the safekeeping of the films and other aids, and for the payment and accounting therefor. A film producer should be less reluctant to deposit his films with such a group on a percentage basis.

A program extending the use of films would call for additional personnel, more projectors, films, and the like. N.Y.A. assistance might well be used in the high schools and colleges.

The burden for distribution and expansion of the use of visual aids under this plan would be where it properly belongs, among the educational organizations of the state. It is not fair to expect a commercial organization to carry all of the burden of promotion of visual aids, teacher-training, demonstration of materials, when such commercial organization has so small a market as at present exists in this field.

Government help might assist in working out this plan so that it reaches not only the 48 state central depositories, but also the 1800 colleges, the 10,000 public libraries and eventually the 275,000 schools. Another suggestion is embodied in the possibility for three or four over-all regional depositories: one in the middle west, one in the south, one in the far west, and one on the east coast.

There is need for a central clearing house, or a supply corporation operating from a point like New York City, to locate, produce, collect and make available appropriate educational films to fit the exact needs of the classroom. Such an organization would be representative of all the national educational agencies interested in this field, as well as of the commercial and professional film distributors and manufacturers of equipment and other visual aids.

V. National Plans

Plans for a national visual-education enterprise are few. The organizations outlined by Cummings, 1923, and Stone, 1925, are valuable. The motion-picture exchange urged in an editorial in the *Volta Review* shows that the need for some national cooperative service is still evident. The British Film Institute set-up is outlined to show what can be and is being done in one country.

Cummings, Carlos E. (Buffalo Society of National Science) "Suggestions for a National Exchange for Lantern Slides." *Educational Screen.* September 1923.

A national exchange for lantern slides would have many functions. It might, first of all, collect and maintain a library of negatives for the preparation of slides. This library service

would be extended to towns and cities where slides are not available.

A national exchange might serve as a laboratory for the preparation of slides from negatives and would set up standards of technical quality. It would give advice to schools and individuals on the purchase of projection apparatus and would provide valuable research data for manufacturers of apparatus.

A national exchange would also serve as a central clearing house and bureau of exchange among its subscribers for duplicate lantern-slide material. One institution might exchange some desirable surplus slides for others contained in the national library. The exchange would provide as comprehensive material as possible along educational lines and would include, among other subjects, travel, Americanization, science, industry, history, art, Bible, and literature. In collaboration with educational specialists, uniform educational sets might be prepared with a brief explanatory manuscript.

All materials would be used for purely noncommercial, educational purposes. The exchange would offer service to subscribers only. Such a foundation would have to be endowed, as it would not, under these terms, be self-supporting.

Stone, George E. (Carmel-by-the-Sea, Monterey, Calif.) "Visual Education: A Retrospect, an Analysis and a Solution." *Educational Screen.* 4:329-37. June 1925.

In a note preceding the article, Stone says that he takes visual education as it already exists and makes no attempt to evaluate the effectiveness of films as compared with other aids. He is interested, rather, in the economics that control the production and distribution of visual aids. He concludes that there are fundamental economic limitations to the variety of material that commercial organizations can afford to carry in stock, and price limitations that prevent these organizations from producing the best type of material for scientific purposes. The solution, he believes, will be a foundation organized on the nonprofit basis that has been so successful with the Field and American History Museums.

Stone has had some very interesting experiences in the production of educational films. The article itself should be read to appreciate why he arrived at the conclusions just stated.

Some educational films produced by Stone are: *How Life Begins* (4 reels), *Living World* (4 reels), *Flame of Life*

(1 reel), *Food* (1 reel), *Malaria and Mosquito* (2 reels). He also reports having made eleven one-reel films of cultural and entertainment value—using the Prizma process of color photography—and color sequences in dramatic productions.

The plan expressed by Carlos E. Cummings for a national lantern-slide exchange inspired Stone's plan for a visual-education foundation. The plan follows.

Organization.—Twenty-five trustees selected for wide cultural interest—no salary—a five-year term. The trustees will appoint their successors. There should also be a director, a technical staff, and a comptroller.

Purpose.—A depository for negatives of all kinds. The negatives will be filed by a librarian and stored under proper physical conditions. Negatives are to be acquired by gift, purchase, exchange, and production. A psychologist and his department will keep in touch with the needs of teachers. [The duties of the technical staff are listed.]

Financial aspect.—Income will come from (1) membership, (2) gifts and bequests, (3) sale, (4) charges for technical assistance and storage. Profits will be used for an endowment fund, the purchase of photographs not otherwise available, and motion-picture production (the films to be sold at a small profit).

Stone prophesies that this plan will be realized by 1935. To prove the effectiveness of such an organization, he points to the American and Field Museums, which accumulate and display—free to the public—a wealth of material. The beauty and accuracy of these exhibits would be beyond the reach of any corporation depending on admissions alone to pay dividends. "No amount of business organization or efficiency of production will offset the fundamental economic handicaps which confront producers of educational films. . . . The production of films by institutions which are not expected to pay dividends, or to justify the outlay by advertising value, offers the highest possibility for public service through films."

Good business management, Stone notes, has increased the endowments of the Museums. Pensions to employees have been established for long and honest service. Collections are housed under conditions that will extend their usefulness to the utmost and make available to future generations the knowledge and culture of the past.

"Suggestions for a Motion Picture Exchange." Editorial. *Volta Review.* 37:76. February 1935.

[This editorial was inspired by an article in the same issue containing an annotated list of films used in one school. The writers hoped the list would be an aid to other teachers who seek to use the best films as visual aids.]

The editor sees the need for a regular exchange service of this type. He suggests an exchange of mimeographed records of all films used for a year. Perhaps the Volta Bureau could use these records for organization into a single list to be published in time for the beginning of the school year.

As a result of such a selective list, a library of the best educational films, both free and rental, could be assembled and edited to fit the needs of the schools more closely (with special reference to the deaf). The industries might even finance such revisions. A distributing center might buy and adapt the educational films and distribute them to member schools, with perhaps a small handling charge.

Conclusions.—The motion-picture film is a real short cut in education, but a short cut only when enough of the good films available are known and fitted into teaching programs.

The British Film Institute (4 Great Russell Street, London, W.C. 1). A descriptive leaflet issued by the Institute. For further information apply to the Secretary of the Institute.

The British Film Institute belongs to the independent type of national institute; i.e., it is neither set up nor controlled by the State, though its aims and constitution have been approved by the Board of Trade.

Control is vested in the chairman and board of nine governors chosen so as to represent equally the producers, renters, and exhibitors of films. Educational and cultural interests and the interests of the general public are expressed through the voice of the membership.

The general aim is "to encourage the use and development of the cinematograph as a means of entertainment and instruction."

A number of specific aims have already been projected. The Institute, for example, is prepared to supply up-to-date information and advice concerning apparatus, supply of films, and

sources. It publishes a quarterly illustrated magazine for the purpose of describing experiments and encouraging discussion. In addition, a monthly bulletin of films suitable for educational purposes or of unusual merit is issued to all its members. An authoritative critical catalog of such films is being compiled.

The Institute is endeavoring to build up a strong body of public opinion in support of films which possess artistic, educational, scientific, or cultural value. It encourages investigation of the different special uses to which films can be put in the various subjects. It plans to build up a film library to prevent films of permanent artistic and documentary value from passing out of existence. It organizes an annual summer school for the purpose of training teachers. It is surveying sources of non-theatrical films.

Dale, Edgar (Bureau of Educational Research, Ohio State University, Columbus, Ohio) "A Discussion Concerning the Proposed American Film Institute." *Educational Screen.* 14:249-52. November 1935.

The tentative objectives of the proposed American Film Institute are as follows:

1. To develop a national appreciation of the potential contribution of the motion picture to the cultural life of America.
2. To collect and distribute significant information concerning motion pictures in education at home and abroad.
3. To stimulate the production and use of motion pictures for educational purposes.
4. To promote the cooperation of all agencies interested in the production and use of motion pictures in education.
5. To initiate and promote research pertaining to motion pictures and allied visual and auditory aids in education.

Many educators are of the opinion that motion pictures deserve a much more significant and important place in the educational scheme. There is, however, no clearing house for information concerning the status or use of film in the schools, or the needs and difficulties of teachers and principals in developing a film program. This information is particularly valuable for administrators and to producers of films and projection equipment.

Another important type of assistance that the Film Institute might render would be to set up committees of teachers and

specialists to evaluate films. The Institute would aid in organizing the committees and in guiding them.

One undeveloped activity that is very important is the dissemination of information regarding independent motion pictures produced by faculty members of various educational institutions. Such films, when produced, are not now made available to other institutions. The American Film Institute might help to organize a circulating system of "amateur," independent, educational films.

The American Film Institute might encourage vital research in its own field, e.g., the relative advantages of silent and sound films, contributions of motion pictures in various subject-matter fields, the use of talking and of silent pictures in adult education, research on methodology in the field of visual and sensory aids. Courses for teachers in the use of visual aids need to be organized scientifically.

The work of the Film Institute will not conflict with any movement now under way. It will not produce films. It will not censor films. It will not attempt to enter into any of the conflicts in the entertainment field. It will serve only as a coordinating and clearing-house center.

During the past year the program of the American Council on Education with respect to its activities in the field of the motion picture in education has been completely reorganized. At the New Orleans meeting of the Department of Visual Instruction Hoban, who is associate in Motion Pictures in Education of the American Council on Education, summarized the plans and progress of the Educational Motion Picture Project to date. This plan has here been briefly outlined.

Hoban, Charles F., Jr. "Services of the American Council on Education." *Educational Screen.* 16:117. April 1937.

Since its inception in 1935 the Educational Motion Picture Project of the American Council on Education has undertaken a clearing house function for the wider and more effective use of films in the classroom. During the past year activities have been concentrated on (1) the development of conferences and

programs related to the preparation of teachers in the use of motion pictures and other modern teaching devices, (2) the preparation of materials for publication, and (3) the initiation of studies related to problems of motion pictures in education.

1. Teacher training program.

The proceedings from the conference held at the University of Wisconsin and that held at Teachers College in 1937 are available from the offices of the American Council on Education. The conference held at the University of Florida is being reported by Donald Bean of the University of Chicago Press.

2. Publication program.
   a) *Motion Pictures in Education: A Summary of Literature.* A Source Book for Teachers and Administrators. Compiled by Edgar Dale, Fannie W. Dunn, Charles Hoban, and Etta Schneider. H. W. Wilson Co. N.Y. 1937
   b) *Motion Pictures in Education: Status and Needs.* American Council on Education. Washington, D.C. 1937
   c) *Teaching with Motion Pictures: Handbook of Administrative Practice.* Edgar Dale and Lloyd L. Ramseyer. American Council on Education. Washington, D.C. 1937
   d) *New Approaches to Education Through Materials of Instruction.* Henry Klonower, chairman, Committee on Teacher Training in Motion Pictures in Education. American Council on Education. 1937
   e) *Status of Audio-Visual Equipment in Schools.* Cline M. Koon, and members of the American Council on Education. U.S. Office of Education. Washington, D.C.
   f) *National Visual Education Directory.* Compiled by Cline M. Koon and Allan Noble. American Council on Education. 1936
3. Program of research studies.
   a) Patterns of distribution of educational motion pictures throughout the United States, with critical evaluation.
   b) Evaluation procedures which are being employed by school districts for the selection and use of educational films. An attempt will be made to evaluate check lists in order that a standard evaluation form may be developed.

c) Production, distribution, teacher training, and classroom procedures with educational films in countries of western Europe, such as France, Italy, Germany, and England.

Part Two

TEACHING WITH THE MOTION PICTURE AND OTHER VISUAL AIDS

COMPILED BY

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TEACHING WITH THE MOTION PICTURE AND OTHER VISUAL AIDS

Introduction

In this section an attempt has been made to provide, in so far as literature in the field will permit, an account of the use being made by teachers and supervisors of motion pictures and other visual sensory aids. Some 400 titles were carefully examined, of which some were completely rejected, some are merely mentioned herein, and a large number have been summarized extensively. The basis for selection was the contribution of the article to an understanding of some of the techniques employed in using these new media of instruction.

The greatest difficulty encountered in this research was the inadequacy of data contained in the articles concerning the exact use made of the materials. What usually occurs is this: a teacher develops a unit of work in what he or she considers to be an outstanding fashion. He writes a paper describing the unit, and submits it to an educational journal. It is then published as a testimonial of the value of visual sensory aids for instruction. Unfortunately, many of the articles are brief and sketchy, offering but few concrete suggestions for a beginner.

There are certain minima of information which a teacher who is planning to use motion pictures would like to obtain from reading articles written by his colleagues. Following are the basic essentials which are desirable in a report dealing with teaching techniques:[1]

What are the objectives of the unit under consideration?
What is the place of the motion picture in relation to the objectives of this unit?

[1] See also "Outline to Guide a Teacher in Writing the Story of a Unit She Has Taught." Effie Bathurst. Quarrie Corp. Chicago. 1937.

What grade level, mental level, or environmental circumstances in the lives of these children have caused limitations in their experiential background?
What are some of the conditions operating before and after the use of the motion picture?
What other types of experience were provided in the unit, and what sequence did these follow?
What was the teacher's past experience in using the motion picture?
Has the writer attempted to evaluate the motion pictures used in this unit in terms of the objectives to be achieved?
What provisions were made for individualizing instruction?
What were the reactions of the pupils?
What leads were furnished for further activities or interests by their reactions?
What technique for using films was found to be most desirable?
What were some of the problems encountered in securing or using motion pictures?
What conclusions has the writer drawn from his use of the motion picture as a teaching aid?
What suggestions would he make to others?
Has the writer been specific in reporting titles, sources, cost, and the like?

Teachers should be urged to submit for publication the reports of valuable lessons or units of work with respect to the motion picture. In his recent book, *How to Use the Educational Sound Film,* Dr. M. R. Brunstetter makes the following statement:

"The supervisor should encourage the publication, even if only in mimeographed form, of outstanding lessons which his teachers have developed. Such recognition of professional excellence not only encourages the creative teacher, but helps to bring others up to a higher level of skill, by suggesting film uses and procedures which might not have occurred to them."

One of the major defects in much of the use which teachers make of films is the failure to evaluate properly either the film used or the use made of it. It is true that the interest of the pupils is one form of evaluation, yet it can be misleading. Furthermore, informational and factual tests, while in themselves important, have the same inherent defects

in testing films as they have in other fields. In addition, unless one has pretested in the beginning, it is difficult to determine the number of facts which accrue as a result of seeing the film as compared with the ones which they had before the film was shown. The absence of critical evaluation in most of the accounts of the use of visual aids in teaching makes it difficult reporting. There is no virtue in the use of new means or methods of instruction if learning is not thereby improved. Certain it is also that the motion pictures available for school use are of exceedingly unequal value, and it is important that teachers select as well as possible in order to use instruction time most effectively, and report the bases of selection to aid the reader in determining the value of the new procedures.

I. Teaching Techniques Generally Applicable to All Subjects

The purposes which visual aids serve may be regarded formally and pedagogically, or informally as a matter of current experience. Whether used in school or encountered at home, at the theatre, or elsewhere in the environment, pictures, sound or silent, motion or still, are for the child a means to at least the following ends:

1. Getting facts, or as a direct source of information.
2. Developing concepts, or a broader sensory development.
3. Promoting thought.
4. Developing attitudes and interests.
5. Socialization.

The teacher may reinforce these outcomes by review or summary, or evaluate them by testing, and thus an additional end served may be stated:

6. Review, summary, or test.

Although accounts differ considerably in formality, or in descriptive detail, and although the reported procedures express widely varying educational philosophies, in many if not most, there are certain phases of technique which appear to be generally applied: For example, it is more or less agreed that a film should be previewed before using; that a teacher should present it to the class as a definite tie-in with the work under consideration; that there should be some comment by teacher and/or pupils during a showing; that there must be some form of follow-up; that repetition of the film is desirable only to clarify misconceptions; and that the material contained in the film should be summarized, or re-viewed in the light of the entire unit being studied. It should here be noted that most of the articles deal exclusively with the motion picture as visual instruction, though a few include other types of visual aids. Consequently most of the discussion on technique here will be concerned with the motion picture. Where the technique for using a still picture or lantern slide applies equally to the use of films, such articles have been included.

It is interesting to note the criticisms and cautions which Dransfield made a decade ago and to compare conditions which prevail today to determine whether any progress has been made in classroom teaching with films. We hope that some of the most serious criticisms have already been obliterated, and that other techniques will be developed with further intelligent use. The series of questions which Winchell poses in his article might well supplement those presented in our introduction. It is significant that he stresses the pupil's point of view in selecting motion pictures. In fact, pupils are keen judges of what is good for them and what they would like to see, growing keener, of course, with age and experience. Winchell and Walters [2] illustrate this point in their articles.

[2] Page 211.

Horn and Gramet make the point that an educational motion picture is more than the "raw material of instruction" to be organized by the teacher. Horn believes that the motion picture should be a directive agency in itself, and may possibly furnish a better organization for some lessons than could a verbal lesson. Gramet believes that a film lesson planned and produced in accordance with psychological and pedagogical principles will require little, if any, supplementary explanation or second showing.

The suggestions for using pictures in the classroom, made by Sexauer, although intended for flat pictures, are equally applicable to the motion picture. Teaching procedures for using motion pictures as a major and a minor portion of the lesson whole, as described by Hollinger, are very suggestive. However, it should be noted that an evaluation of the motion picture cannot be measured by objective tests which deal with factual items alone. Gow points out that the teaching of facts, important though that may be, plays a small part in real education. The value of the cinema is not measured by facts, but by attitudes, awareness, sensitivity to conditions. It is not fair to measure these gains by tests for factual information.

Unzicker and his committee have devised a chart for correlating the technique of teaching with visual aids with the elements of the learning process itself. This is an interesting comparison. The resolutions concerning the techniques of teaching with films adopted by the International Congress of the Teaching and Educational Film are next quoted. The execution of these resolutions, especially the fourth and fifth, requires teacher preparation and constructive supervision.

Johnson and Calo have summarized effectively the general principles underlying teaching with films.

A propos of the place of visual aids in the curriculum, Robertson points out that:

"The greatest difficulty in the use of visual aids is the personal equation. A teacher spends several years training for her profession and receives only the rudiments of her art. She has to adjust, amplify, and delete to suit different types and nationalities of children. She adjusts the pedagogical art as taught in her training school to suit her own personality and ability. This should be remembered in using visual aids. Their use will strengthen her teaching process and it will immeasurably lighten the teaching burden, but it stands to reason that she will have to adapt it to her personal pedagogy. If the results at first do not come up to her expectations, the use of the aids should not be condemned. She should remember her early teaching experiences and the necessity she encountered of fitting her pedagogy to herself and her pupils. The same procedure followed when adapting visual aids to her teaching process will eventually enliven and ease her teaching efforts beyond her greatest expectation."

The reference for this quotation, and other articles dealing with a general discussion of technique which have not here been summarized, are:

Robertson, E. D. (Vice-President, Stillfilm Inc.) "Some Principles in the Use of Visual Aids." Los Angeles School Journal. 14:20-2. June 27, 1931.

Gramet, Charles A. "Methodology of the Motion Picture Lesson." Educational Screen. 15:304-5. December 1936.

Reed, Paul C. (Supervisor of Visual and Radio Education, Rochester, N.Y.) "An Antidote for Verbalism." N.Y.S. Education. 24:139-40. November 1936.

Hardie, John L. (London) "Classroom Methods." Sight and Sound. 5:no.20:154. Winter 1936-37.

Lampe, Felix (Germany) "Geography Teaching with Films." International Review of Educational Cinematography. 4: 253-62. April 1932.

"A Note on the Methodology of Teaching by the Film." International Review of Educational Cinematography. 5:772-5. December 1933.

Gregory, W. M. (Director, Educational Museum, Cleveland) "Modern Aids of Experiences in Learning." Eighth Yearbook. Department of Supervisors and Directors of Instruction, N.E.A. 1935:102-3.

Weber, Joseph J. "A Suggested Methodology for the Use of Informational Motion Pictures." Educational Screen. 7:8-10. March 1928.

Hollis, A. P. (DeVry, Inc.) "A Tentative Plan for a Motion Picture Lesson." *In* Motion Pictures for Instruction. Chapter VI. p 146-61.

"Pedagogic Reforms and the Film." International Review of Educational Cinematography. 5:798-9. December 1933.

Dransfield, J. Edgar. (Principal, School No. 3, West New York, N.J.) "Is There a Technique for the Use of Motion Pictures in Schools?" *Educational Screen.* 6:121-2. March 1927.

The motion picture as an educational adjunct has probably suffered more than any previous innovation through unskillful enthusiasm. It did not develop as an educational factor, but as a recreational, theatrical one. After a period of crude, slapstick comedy, someone saw the educational possibility in bringing the living world into the schoolroom. The film was then transplanted bodily from the theatre into the school, but it did not fit since it was unpedagogical in arrangement and content, and it appealed only to the attitude of entertainment.

Producers of educational films have developed a series of films suited to the curriculum. But how are they used? Do they arrive at the proper time for application to the particular subject being studied, and for the particular topic of that subject? Or, do they come on a circuit system regardless of the curriculum organization? How are the films selected? Who does the selecting? How are they shown? To the particular group studying the subject? To the school en masse? In the classroom? In the auditorium? What is the attitude of the pupils toward them? Entertainment? Interesting side line to the regular work? A part of the classroom procedure with a learning attitude and open discussion?

These offer but a few questions to be answered by the educator who is using educational movies in his school. They are involved in a technique for the use of motion pictures in schools.

It is amazing to find how little of technique there seems to have developed. In the larger communities where there is an established library of films, the schools are on a circuit. A school is given a certain day for "movies" and pictures arrive on that day. There is no adaptation to the curriculum, to class units, or to the learning attitude. The pictures are shown after school

or at any auditorium period with as large a group as the room will seat, participating. Entertainment develops as the sole result. Many times the principal or other person in charge does not know what picture is coming, has never reviewed it and has had little or no choice in the selection of it. If the picture of Yellowstone Park comes at the time that the grades are studying the industries of New York State the school is called to assembly and they see it.

More often than not, the equipment consists of only a large powerful machine in a fireproof booth in the auditorium thereby restricting at once the type of work and the quantity of work to be done in that unit, requiring expert and licensed operators before any work can be done. This alone results in increasing costs to such extent that everything but mass work is out of the question.

There seems to be no widespread tendency toward introduction of motion pictures in schools. There seems to be a decided paucity of authoritative literature in the field. Very few institutions for teacher training offer courses in a method for the use of motion pictures, and the normal schools offer practically no training for the classroom teacher-to-be. Is there a technique for the use of motion pictures in schools?

Dransfield, J. Edgar. "A Technique for the Use of Motion Pictures in Schools." *Educational Screen.* 7:165-8. April 1927.

The problems of motion picture use and projection must be carefully studied in the light of their availability to the classroom teacher. The teacher is often bound to a time schedule, too busy to organize materials, untrained in the use of machines. Yet administrators do not make provisions for these things when they purchase expensive equipment.

To be educative in the sense that it teaches a specific thing as does the textbook, the motion picture must be used in a class unit, in the particular subject being taught and at the time that it is taught. To show pictures on a circuit basis, when they happen to come around, denies to them the value which they contain and introduces the entertainment function which is deadening to the educative value, except in a purely vicarious sense.

The projection of slides or films must be reduced to a routine arrangement whereby a minimum of time is spent in darkening rooms and setting up the machine. A corner of the assembly may be marked off with black curtains to permit a class to see films in one part and other classes to be studying in other parts of it. Most of the films shown in the class require small group study.

Films in geography, history, nature study, or science must be used as an adjunct to classroom teaching. When shown immediately after the study, the facts will be clinched by the visual image.

A desirable procedure for planning the use of films is to insert in the schedule for the term the films which would be helpful. The principal takes the schedule and attempts to comply rather carefully with the requisitions. A film is not shown far in advance of the study of the unit it covers, since there is no opportunity for intelligent preparation.

Comment during the film showing is necessary, although to a limited degree. This insures that the children will note the important points of the lesson.

Winchell, Lawrence R. (Head, Visual Education Department, Rutgers University) "What the Motion Picture Has Accomplished for the Schools." *School Executive.* 51:248-9. February 1932.

Criteria for using the motion picture from the pupil's standpoint:

1. Do the pupils look at the film for enjoyment, or is there behind this a question for aid in solving their problem?

2. Do the pupils accept the motion picture at face value, or do they make comparisons and weigh value? Do they check with textbook statements?

3. Are children's reports fragmentary, or do they organize their observations into cause and effect, relation to other information, the basis for a problem, or something similar showing thought in their answers?

4. Do the pupils see visual material of their own, analyze it, or evaluate it and offer it in class? Do they do independent thinking when such is shown?

5. Do the pupils have definite problems in mind, the answer to which they expect from the film?

6. Does the film material fit the work being done by the class? Is extraneous material shown?
7. Are doubtful points explained as the film is shown? Are explanations pertinent?
8. Is follow-up work carefully planned? Does it summarize what was shown and link it with other class work?

Criteria for the teacher's evaluation of her procedure:

1. Have I carefully previewed the film so that I can meet any situation that may arise?
2. Is everything in readiness so that a minimum of time is spent between the introduction and the pictures?
3. Is the lesson well planned? A stereotyped plan for use with every picture will cause the lesson to be a bore rather than a pleasure.

Following are some suggested methods, but the effectiveness of use is dependent on the *enthusiasm* of the teacher and the type of material.

A. Show the picture through without comment. Discussion should follow the film and there should be a second showing on the following day for clearing up misconceptions.
B. Show the picture in units to fit topic of discussion. The film may be stopped at end of units and discussions carried on. Stimulate interest in the lesson before the film showing.
C. Plan films as an integral part of the course of study, but they should not be formal.
D. Unless the element of motion is necessary, motion pictures are not necessary. The teacher must discriminate.
E. It is important that interest be carried further than just the initial spurt which dies out soon after. Stories, charts, cartoons, pictures and motion pictures are all effective means of stimulating interest. The last, because they give life, color, atmosphere and personality, and maintain interest for a longer period.
F. Though the motion picture has a peculiar niche in the wall of visual aids, we must not blind ourselves to the fact that it is not always practicable.

Horn, Aaron. "A Neglected Aspect of the Educational Film." *Educational Screen.* 6:411-12. November 1927.

The motion picture has been thought of as "the raw materials of instruction otherwise inaccessible to the teacher," but its organization into the teaching unit should be left largely to the

teacher. The chief concern of educators has been the content of the film. Is the content acceptable in the course of study? Does it correlate with specific classroom work? Can the individual scenes of the picture be organized about a specific lesson aim?

Although this aspect is important and worthy of consideration, there is another which has been suppressed. A motion picture should furnish more than the raw materials of instruction —it should furnish as far as it can the organization of the lesson as well.

This makes of the film more than an aid, it is a directive agency in itself. This attitude recognizes that the film may possibly furnish a better organization for some lessons involving old perceptions than could a verbal method.

This does not mean that with the organization of the film into teaching units the teacher will eventually be displaced. As long as individual differences among pupils exist, it will remain impossible to dispense instruction from celluloid or paper without necessary adaptation made by an educated teacher.

This screen language has arisen as a secondary means of expressing thought in a definite symbolism. It does not, nor will it ever, challenge the position of verbal language. It is, however, an invaluable supplement to it. It has a field of expression which, while at present infinitely narrower than that of verbal language, overlaps it at many points. It has displayed a power to direct the thought processes into channels which are almost completely foreign to verbal language. It may possibly be able to serve at some points as a check upon the vagaries of thought by "sub-vocal or vocal speech."

Sexauer, Myrtle (Frick Training School, Pittsburgh, Pa.) "Some Uses of Pictures." *Educational Screen.* 12:58-9. February 1933.

Some uses of pictures are:

1. A group of carefully chosen pictures may be used for *orientation* or a reconnaissance survey. In such a case there would be a fairly large number of pictures. Care should be exercised to choose several pictures showing the most important kinds of activities and only a few showing the activities of less importance; this will help the child place emphasis upon an

interpretation of the activities that are characteristic of the region, rather than lose himself in the details of minor activities. The relationships suggested by pictures used in this way should be further strengthened by maps, other pictures, and reading.

2. A *motivation* lesson based upon an intensive study of *one or two* pictures showing activities that are characteristic of a region is an interesting way of introducing a unit. Such ideas should likewise be strengthened by maps, statistics, and reading.

3. Pictures may be used to introduce a new concept, especially if the understanding of the concept would involve a lengthy word-picture.

4. Pictures can be used as a problem-raising and problem-solving device, and no use of pictures is of greater value than this. Intensive picture-study often reveals disconcerting data and helps the child raise worthwhile problems. If the child uses the suggestions in the picture to help solve the problem he raised, he is *reading out* of a picture suggested relationships of man's activities to his natural environment. If he uses another picture or another source of information to help solve the problem, he is *reading into* the picture suggested relationships. This use of pictures readily trains the child, not only to raise good thought questions, but to seek their solution, first in the picture itself and then in other sources of information.

5. Pictures may be used as a check upon information gained from maps, graphs or statistics, and reading, or vice versa.

6. Pictures may be used as a testing device. Tests take on a form of definite teaching when pictures are used as a source of information, and they change from the dreaded formal tests to ones the children enjoy.

Hollinger, J. A. (Director of Nature Study and Visualization, Pittsburgh, Pa.) "How to Teach with Motion Pictures." *Ohio Schools.* 11:11. January 1933.

When motion pictures are used in the classroom they should be integral parts of lesson plans. A motion picture may afford the major part of specific content material, conveying most of the information to be presented and stimulating reflective thinking along various lines; or it may occupy a minor position in the lesson plan, merely illustrating points that might not be made clear to the learner in any other way. Motion pictures

should not be expected to do all for the learner. Skillful teaching, with motion pictures as aids, is essential.

When a motion picture occupies a major position in a teaching plan the procedure should be somewhat as follows:

1. In introducing the ideas contained in the picture to provide proper mental set or desire to learn, the teacher may, before presenting the picture:
   - A. Ask a few leading questions
   - B. Stimulate some discussion among the pupils
   - C. Conduct directed or supervised study
   - D. Give a short introductory talk
     1. This may be illustrated by means of
        (a) flat pictures or photographic prints, (b) stereographs, (c) lantern slides, (d) charts, maps, etc.

2. Give a pre-test when a motion picture is presented as a whole.
   - A. To fix attention upon the important ideas in the picture
   - B. To stimulate a desire to know or to develop skill

3. Present the motion picture immediately after the pre-test (A reel of 35mm. or 16mm. film requires from twelve to fifteen minutes for presentation.)

4. Follow immediately the presentation of the picture with a test to determine how much has been learned. This test should be the same as the pre-test.

5. Compare pupils' individual scores made on the pre-test with those made on the follow-up test.
   - A. Determine from those scores what ideas need further emphasis by:
     1. Repeating parts of the picture as needed
     2. Definite reading assignment or other research
     3. Class discussion (socialized procedure)
     4. Questions and answers

6. Reorganize ideas in review
   - A. Pupils' reports
   - B. Teacher's comments
   - C. Pupils' statements of their own conclusions
   - D. Notebooks

7. Final test (mastery test)

When the motion picture occupies a minor position in the development of a learning unit it may be presented either in parts or as a whole.

1. Only that part of the picture should be used at a given time which illustrates the particular points under consideration. This may be 20 feet, 50 feet, 100 feet, more or less. For review, show the whole film.

2. The entire picture may be presented as a preview at the proper time in a development plan.

A. When used in this way the teacher should be careful to avoid listless, passive reception by pupils.
   1. There should be intellectually active attitudes.
   2. Pupils should be held responsible for ideas presented by the motion picture and for reflective thinking stimulated by it.

Gow, Ronald (Altrincham, England) "The Educational Use of the Cinematograph." *Educational Screen.* 6:71-3. February 1927.

The value of the cinema is limited, but this value is so high that it justifies the purchase and acquisition by each modern school of films and equipment.

Tests and results: There is no lack of statistical evidence that lessons taught with the aid of the cinema are superior in result to those without, but there is a tendency in these tests to ignore the real function of the cinema. Examinations and the allotting of marks seem the only way we have devised for testing the results of teaching and the scientific investigator must concern himself with facts assimilated and properly reproduced in order to estimate the value of any particular method. If, however, the method under examination is not designed for, or unsuited to the teaching of facts, to apply the usual tests is obviously unscientific.

Moreover, the teaching of facts, important though it may be for the purposes of examination, plays a small part in real education. It is unfair to claim a certain value for the cinema and to justify it by testing a completely different value.

Unzicker, S. P. (Chairman, Visual Education Committee, Wisconsin Education Association) "Classroom Technique in the Use of Visual Aids." In *Visual Education.* Wisconsin Education Association. November 1935. Chapter V. p. 19-25.

After carefully selecting the appropriate visual aids that correlate with the regular classroom work, it is necessary for the teacher to preview the visual aids and plan the method of presentation.

The preview of visual materials will reveal specific details and indicate changes that should be made in the lesson plan. Such changes may be any one or more of the following:

1. Furnish additional information to enable the pupils to make the connections and see the relationships between the illustration and previous teaching.
2. Develop an introduction to the visual aids.
3. Devise intermittent or running comment.
4. Select or eliminate definite parts or details of the visual aids if such changes will provide better learning conditions.

THE RELATION OF TECHNIQUE TO STEPS IN LEARNING PROCESS

(These relations are reciprocal, interacting on each other)

Visual Aids Technique	Elements in Learning Process
Selecting visual aids	Kinds of impulses Intensity of impressions Readiness (stage of development)
Preparations for use of visual aids	Intensity of impressions) Forceful launching) Interest factors) Mind set Readiness (pupil)) Continuity of impressions
Use of visual aids in teaching	Connecting the new with the old Strengthening previous impressions Interaction and correlation of ideas (pupil activity) Pupil expression (discussions, quizzes, projects)

"Resolutions Adopted by the International Congress of the Teaching and Educational Film. First Commission, Methodology of Instructional Films." *International Review of Educational Cinematography.* 6:335. May 1934.

As to the methods to be used for school films, the Congress states:

1. That the use of the cinema should not interfere with the educational influence of the teacher, nor with the effect of his words. It is he who should put the questions, explain, comment, inspire and direct the activity and the response of the pupils.

2. That consequently the teaching film should not be sound or talking, but a silent film in which the commentary is made by the teacher except where the sound or talking film may usefully complete and strengthen the visual impression.

3. That the use of the film should not induce a passive absorption of rapidly succeeding scenes, but that it should be used to stimulate the activity of the child in every kind of scholastic work.

4. That during the projection of the school film the teacher should have the opportunity of intervening, in order to illustrate points which require special explanation and that he should take into account the fact that lantern slides are very often very useful, either by themselves or together with motion pictures.

5. That the subjects to be used for school films should be part of an organized didactic plan, which has been previously studied by pedagogues and approved by the school authorities in accordance with the school curriculum and which may be modified according to new possibilities which the use of the film presents.

Johnson, Robert S. (Acting Executive Secretary, Department of Visual Instruction, University of California, Berkeley) "Use of Film in Education." *Sierra Educational News.* 29:41-2. March 1933.

There are two places in the school where motion pictures can be used to advantage. These are the auditorium and the classroom. Each place requires its peculiar type of film and peculiar method of presentation.

1. *The film as a teaching aid in the classroom*:

The film must be regarded as an aid to, not as a substitute for verbal instruction. Far from relieving the teacher, it requires more planning and more ingenuity than if the class were conducted without it.

A. The motion picture must be selected to aid in solving a particular problem.

A film is used incorrectly in a classroom when it is shown merely because it is related vaguely to the general course.

The use of a film because it may be obtained free of rental charge is false economy, when its application to the curriculum is indirect.

A film which might be valuable in one class might waste time if shown in another class in the same school. The presence of a film in the school should not influence other teachers to use it when not needed.

B. The peculiar nature of the motion picture assigns to it a particular function as a visual aid.

The film is used best either to introduce or to summarize a problem requiring from several days to several weeks of study. Sometimes it may be used effectively both at the beginning and end of the study of a certain problem.

C. The showing of the film must be timed accurately.

To show a film a few days earlier or later than its proper time in solving the problem destroys much of its value. When administrative procedure requires a change in date for showing the film, the lesson plan must be altered so that the films may be used profitably at the available times, or they should be eliminated completely.

D. The film and verbal instruction must be integrated.

Teachers' manuals which accompany films should be carefully studied by the classroom teacher well in advance of the film showing.

E. Special effort must be made to fix in the memories of the students the material presented by the film.

The film so rapidly presents a great amount of material that the memory must be given assistance. It may often be found advantageous to stop the film several times while projecting. Discussion, quizzes, and themes are several devices which may be used to aid the students to retain the knowledge presented.

2. *The film as educational or cultural entertainment in the auditorium*:

A. A well-balanced schedule should be made for such entertainments.

B. These programs should be as timely as possible, especially with respect to holiday programs.

C. Subjects for programs should be grouped and the programs follow each other as orderly as possible. Hit-or-miss ordering should be avoided.
D. In general, industrial films make poor auditorium programs.
E. All teachers should be given in advance a schedule of auditorium programs. Classroom work should be related to these programs wherever possible.

Caló, Giovanni (Professor of Pedagogy, University of Florence) "Cinema and Teaching Methods." *International Review of Educational Cinematography.* 6:353-8. May 1934.

The greatest criticism of the motion picture from the point of view of method is that the use of luminous projections in schools constitutes in certain respects an improvement of the *purely intuitive* method, rather than the *active method* which is now in the ascendant in didactics and the contemporary school. This does not imply that films have nothing in common with the active method, but the interest and curiosity which may be aroused through the projected image is active in a wide sense. But, where it is possible to see everything, then there is less field left and less impulse is available to stir the fancy and allow it to have a free form of expression.

What is undoubtedly true in every sense and in all circumstances is that the motion picture, especially if it becomes an end in itself, when it is not subordinated and enclosed, so to speak, in a teaching method which exists outside of it, and does not allow it to act alone on the child's spirit, inevitably tends to draw with it in a kind of fascination the child's interest, leaving it much less capacity for personal examination, control, self-criticism and various mental elaborations in a much greater degree than the lantern slide. What is especially excluded by the very nature of luminous projection, is the child's initiative, its oral capacity for work, its tactile and muscular experience of the object, its possibilities for "doing it," modifying it and making use of it. It is this which constitutes the essence of the active method, especially in the lower teaching grades, and to a certain extent and in certain forms and subjects, also in the higher grades.

Practical Suggestions for Using Films

1. Luminous projections should not be used in schools for those objects which can be adequately observed in reality.
2. Preference should be given to a graphic or plastic representation of the objects taught, unless there is some real distinct advantage to be gained in showing the particular reality in movement, or unless it be deemed advisable to obtain with fixed projection special effects for understanding.
3. The use of both lantern slides and motion pictures ought to be much restricted in elementary schools, and increasingly employed in the higher grades. Documentary films in the wide meaning of the term, and pictures having a recreational-educational scope could be used with a certain frequency and periodicity even in elementary classes and in pre-scholastic institutions.
4. In general, the use of the luminous image as a visual aid ought not to be too frequent if only to prevent the pupils' acquiring harmful mental habits and submitting to hygienic disadvantages. The film should not be shown for long on each occasion of a projection, in order that it may not interfere with the teacher's regular teaching and risk causing a confusion of the real aims of instruction.
5. The teacher's word should always set forth the problem which may later be illustrated by the film giving the pupil cognitions and ideas beyond those immediately before his eyes. Sub-titles, explanatory comment, and printed matter should not be used with children.
6. The use of lantern slides should be considered preferable to motion pictures as an educational means for increasing the child's powers of observation.
7. The teacher ought to regulate the rhythm in motion picture projections, and be able to repeat certain parts, stop the projector and insert slides between the running off of the film, so that the best possible advantage may be taken of the visual instruction.
8. Teaching films should always be produced with the collaboration of pedagogues, according to the educational purpose they are intended to serve.
9. Better than complete darkness is provision for a small illuminated zone near each pupil to enable him to take notes or read.

10. It is necessary to obtain with all possible means the active collaboration of the child and draw its active attention to objects thrown on the screen, such as graphs, models, etc.
11. The pupil ought always to be invited to make a verbal or written reconstruction of what he has seen after the projection.

At a recent meeting of the Department of Visual Instruction, Moore made some very worth-while suggestions with respect to the art of questioning students after showing a film or slide. He stresses the technique of "thought questioning" and suggests certain types into which such questions might be classified.

Moore, H. K. (Thomas A. Edison High School, Cleveland, Ohio) "Test Questions of the 'Thought' Type in Visual Education." *Educational Screen.* 16:113-14. April 1937.

Following are some suggestions for formulating questions to be used with pictures to produce thought instead of teaching facts. This classification is not systematic, but is an expedient:

1. *Organization of material.* This involves questions which develop the ability to exclude the irrelevant and to select just those things necessary for answering the question.

2. *Meeting of situations.* The solution of a problem requires an examination of the situation in which one finds himself, the calling up of various possible solutions, the testing of these solutions, and finally their verification. Strictly speaking, this classification includes all the others but here it will be restricted to problems of the 'if' type, such as: "If you lived in New England in 1630 and wanted some fuel to keep you warm, what would you do?" The student would select the answer from one of the following: phone for a ton of coal, light the gas, chop some wood, use an electric stove, or light the oil stove. This question would be based on the motion picture of life of the Puritans.

3. *Comparisons.* Thought is required when one compares the things seen in the film with knowledge he already has, or when data from two or more films are considered together. A question of the type, "Which of the following employments

usually offers the greatest independence? miner, farmer, factory worker, cotton picker, engineman," would suggest thinking by comparison.

4. *Applications.* These include questions which involve the personal or civic application of data, such as

Which one of these do you think best describes the Columbus of the film you saw? wavering, perseverant, pleasant, cautious, prosperous.

The distinction is made between thought and memory questions as follows:

1. We think with things that we have remembered; facts are the material of reasoning.
2. Thought problems studied by a class may become memory questions on a test.
3. All "why" questions are not thought questions; some "what" questions are of the thought type.
4. A question might require considerable reasoning for one pupil, and mere recall for another.
5. A question might require thought in grade seven, and mere memory in grade eight.

Some criteria for selecting thought questions are:

1. The question should be worth thinking about. The teacher should examine each question and then ask himself: "So what?" or "What of it?"

2. Definite application to the pupil's own problems or to community problems should be made whenever possible.

3. The original selection of material for study is important. It is easier to find thought questions in live material than to strain at promoting useful thought about useless data. The question, "So what?" might be asked of the material itself.[3]

4. Those who are successful in solving their own problems are more likely to be helpful in leading others to think.

5. Visual education material is more than just another way of stuffing a pupil with information; it is more than a supplement to other sources of subject content; it can be a stimulus to thought.

By way of summary, then, the combined judgment of the writers represented in the preceding pages includes the following suggestions for using films in school:

[3] This leads to a consideration of criteria for selecting materials, for which see Part Three.

A. With respect to selection and the purposes to be served:

1. The teacher must have a clear idea of the contribution of the film in relation to the unit as a whole.
2. There must be provision for previewing by the teacher. A teacher's guide is no substitute for the preview, but should be used as an aid in planning the film lesson.
3. Films are very effective as an orientation of a unit, since they contain the concrete ideas basic to any organized thinking or reflection.
4. Projected pictures should be used only when recourse to the actual object or identical experience is impracticable.
5. Teachers should use visual materials in accordance with their philosophy of education.
6. Sound in motion pictures should only be used when it is necessary to the concept to be conveyed. Interpolated music is often unnecessary.
7. Teachers should have an established set of criteria from which to select films and other materials.
8. The use of visual sensory aids need not wait upon the expenditure of much money, if any. By developing keen powers of observation in the pupils many experiences may be gained at little cost.
9. The use of visual aids is not an isolated teaching method.

B. With respect to methodology:

1. Pictures are not a substitute for language, and verbal expression should be encouraged wherever possible.
2. Picture lessons should be followed by activities of various types, such as reading, manual activity, sketching, writing, dramatization, and so on. If a film is worth showing at all, it is worth following up.
3. The routine of presenting a film should be such as to eliminate completely any distractions.
4. Comments during the showing of a film will vary greatly depending on the film, on the class, and on the objectives to be achieved.
5. The teacher should express verbally to her pupils the purpose of the film showing.
6. Films may be shown in their entirety or in part, depending upon the objectives of the lesson, and upon the pupils' background.
7. The teacher should vary his technique in using visual materials, and avoid routine procedure.

8. The questions presented in the informal discussion period following a film showing should be as concrete and as pertinent as possible.

C. With respect to the preparation of the teacher:

1. Teachers desiring to improve their technique in using visual aids must be willing to give serious thought and ample time to planning, evaluating, and reporting their experiences.
2. It is very desirable for teachers to undertake the production of a simple educational film which will conform to accepted psychological and pedagogical standards. Such an activity will better enable teachers to evaluate existing films, and to clarify their own criteria for selecting educational films .

II. Teaching With Visual Aids in the Elementary School

In this section the digests have been arranged according to the subject in which the material was developed. Where reference was made to other subjects or levels of instruction, these have been mentioned in the index. Although an attempt has been made to be as specific as possible further analysis is difficult, for, as has already been pointed out, the articles are often lacking in specifics.

In reading the following summaries of lesson units, it would be well to bear in mind the extent to which the writer has answered the questions listed in the introduction.[4]

From these articles it may be deduced that visual materials may be used in practically every subject of the curriculum; that with intelligent use they are suitable for a progressive, activity type of school, as well as for the formal type of curriculum; that teachers are convinced of the value of using visual materials, but that the best procedure is still to be determined by experimentation.

The most practical type of guidance with respect to the use of motion pictures on various grade levels and in many

[4] Pages 111-12.

fields of learning is provided in the new book by Brunstetter. It is hoped that this book will be made available to every teacher seriously interested in improving his teaching technique with motion pictures. For this reason, the summary of the book which is given here is very brief, merely indicating the areas in which illustrations are provided.

Comments by classroom teachers regarding the value of films are found in the summaries which follow. The Visual Education Committee of the New York State Association of Elementary Principals has listed some of the comments made by teachers in that state. The Bulletin containing these comments should similarly be in the possession of supervisors and teachers.

The Willey article summarizes the results of an investigation in which the teachers of the University of Denver Training School cooperated with their principal to determine the value of the silent film as a teaching aid. An examination of the judgments of these classroom teachers will reveal many significant points of view which were developed after careful deliberation and practice. The active participation of the pupils in many of the lessons gives further testimony of the intelligent way in which these teachers organized the use of motion pictures to fit the curriculum of a modern school.

Teachers in the primary and non-reading grades have expressed the need for guidance in using motion pictures for their children. The digests of articles by Brérault, Eads, Keliher, Cook, the Pittsburgh, Pa. Handbook, Lampe, and Rowland will furnish concrete suggestions for using motion pictures on that level of instruction.

Poole reports her findings from an investigation in a school in Akron, Ohio to determine the effectiveness of various teaching techniques with silent films. Her conclusions are interesting.

Dorris applies the use of motion pictures to her philosophy that no subject should be taught in any grade as a

thing apart, but rather as a contributing factor of the great mass of valuable knowledge which tends to enlighten and enrich life.

The use of Eastman Teaching Films in primary and elementary nature study, social science, elementary geography, reading, health, and history has been interestingly described in a report by Baumeister. The reader is referred to the original article.

Emery makes the point, which a few other writers have stated in one connection or another, that certain motion pictures lend themselves admirably to "sensitizing" pupils to conditions prevailing in various life situations. After showing industrial films, such as *Through Oil Lands of Europe and Africa, Hunting Big Game with a Camera,* and others, the author concludes that these films were successful in imparting attitudes and social values which cannot be measured by objective tests. It is this intangible influence of the motion picture which research workers have so far neglected. He considers this a most important aspect, and one which teachers should emphasize to a larger extent.

The article by Dieffenbach describes how he has made the use of motion pictures in his school a socially significant activity for interested pupils.

In conclusion, the point might be made that teachers will develop effective techniques for using new materials of instruction only insofar as constructive supervision and guidance is provided by the administration. Yet administrators will make provision for supervision only insofar as teachers express interest. It is obvious that pressure must come simultaneously from both ends to achieve maximum efficiency from the educational motion picture.

Brunstetter, M. R. (Teachers College, Columbia University, N.Y.) *How to Use the Educational Sound Film.* University of Chicago Press. 1937. 174p.

This book is based on studies made since 1935 in school systems and schools of varying size, so selected as to furnish

a cross-section of the educational field, and where an extended experimental program was set up to discover effective teaching and administrative procedures of an audio-visual program.

The chapter on "Teaching Purposes for Which the Sound Film May Be Used" contains the following suggestions:

1. Teacher preparation for the use of the sound film.

The skillful teacher should consider the following points when preparing to use sound films:

A. What are the objectives of the unit?
B. Which sound films will be most helpful in achieving these purposes?
C. How well do I know this particular film?
D. What supplementary printed materials are available to help me in its use?
E. At what point in the unit shall I introduce the film?
F. What do I expect it to accomplish at that point?
G. What activities and projects might be started as an outgrowth of the first showing?
H. How many times shall I use the film, and for what purposes?

2. Some of the purposes for which the sound film may be used are:

A. To provide a basis for reading material
B. To aid in spelling and language work
C. To stimulate interest in art work
D. To add to our "store of information"
E. To stimulate group feeling and cooperation
F. To develop further the reference habit
G. To serve as a basis for arithmetic

3. The place of the sound film in the unit of instruction:

A. To initiate a unit of instruction
B. To present the facts and concepts of a unit of instruction
C. To enrich or extend a unit
D. To provide a rapid survey or general background
E. To summarize or review
F. For club programs and special projects
G. For assembly programs
H. For teacher-training projects
I. For parent-teacher and other community group meetings

In the third chapter, "Techniques of Teaching with Sound Films," case studies are cited to illustrate the following problems:

1. Frequency of showing a film.
2. How to introduce a film in the day's lesson to avoid excessive motivation.
3. How to adapt a film to the current interests and capacities of a class.
4. Varying techniques for manipulating the film showing.
5. Some techniques for following up the film showing.

An analysis of the ways in which sound films were used under many conditions reveals the following shortcomings in technique:

Faulty procedure in film lessons, in general, may be attributed to poor administrative procedures, or to a lack of familiarity with the medium on the part of the teacher.

1. Where direct teaching through the use of the film is to take place, it is probably unwise to show more than one or two reels.
2. It is undesirable as well to use a group of more or less unrelated films at one sitting.
3. Showing of a film at the improper psychological moment is another poor teaching technique.
4. A single showing of a film where repeated showings are needed is poor teaching technique.
5. Too great dependence upon the teachers' manual accompanying the film may lead to a very formal and uninteresting lesson.
6. Some teachers fail to introduce the picture in its proper setting.
7. Limiting the use of a film to a single occasion during the lesson or unit is another shortcoming.
8. Poor selection of a picture for the lesson or unit is exercised.
9. Aimless discussion is carried on after the film showing.

Committee on Educational Progress, Visual Aids Division. *Visual Aids in the Schools*: A Report of Present Uses and Suggestions for Improvement. New York State Association of Elementary Principals. Bulletin IV. December 1935.

Following are some of the comments made by teachers to the committee with respect to the use being made of motion pictures in the classroom:

1. It makes geographical facts come to life. While showing the film, I make comments as is necessary. After the film is shown the children are questioned about it to determine what new information is gained and to review facts with which they should already be acquainted. In addition to this, I use the film as a basis for oral and written English. It gives the children something to tell about. It forms a good topic to use in writing a friendly letter.

2. Children cannot fully appreciate the study of foreign people and conditions by facts that are given in textbooks alone. The 16mm. silent picture is an excellent means of presenting information, and of great value in forming correct mental concepts in the minds of the pupils. These films arouse thinking on the part of the child.

3. Films function very effectively as an introduction to a new topic which is not within the experience of the child, as it stimulates interest in this new field of work.

4. Films develop the powers of observation on the part of the pupils and make them eager to produce or recreate their interpretations.

5. The film is most helpful in all kinds of geography, health and nature instruction.

6. Our project was Japan. Several reading lessons were given first, in which necessary vocabulary was developed and associated with pictures of the text. At this time, children decided to work out a Japanese village on the sand table. Here I used a film dealing with Japanese life. I allowed the children to view the entire film without comment. The following day they viewed it again after having made an outline of the points to look for which would help them in their plans.

7. We use films to introduce the study of transportation.

8. Films are shown whenever I feel that the child needs something my words or still pictures cannot give him, for instance, when studying the mining of coal and its uses by man, when discussing the interdependence of the world today, when trying to develop world-mindedness among the children who might otherwise think the customs and costumes of other peoples humorous.

9. I live in a section of the state which is far removed from the ocean. Many of the children who are studying geography and history have never seen the ocean, the ships that sail it, or the beating of the surf. Motion pictures shown with a projector borrowed from a local man of prominence helped the children in a way that only a person teaching in a situation similar to mine can understand.

10. My children, who have been working on a clothing unit, have used many films dealing with the evolution from seed to cloth of many plants from which the raw materials are obtained.

11. We have been studying the foods and foodstuffs of the nations of the world. Living as we do in an agricultural community, this unit has been of great interest to the children. Motion pictures showing the raising of foodstuffs with which they were unacquainted and their processing provided an eye-opener to these children.

12. *The Yale Chronicles of America Motion Pictures Series* has given us an understanding of the life and activities of the men who founded, fought for, and developed our country that no other medium has been able to provide.

13. Before we write a historical play as a group unit we review as many motion pictures dealing with the period as we can obtain. These we examine in the light of our research of a reading and still picture nature. Discussions are frequent, as points of disagreement as to events, customs, or other facts are found. I use these disagreements to bring out the differences between primary and secondary sources. Then we do our best to determine the truth of the matter. A critical, analytical attitude has resulted, as well as a habit of suspending judgment until all evidence is in.

Willey, Gilbert S. (Professor of Education, Principal of Training School, University of Denver) *The Silent Film As a Teaching Aid.* Akin and Bagshaw, Inc. Denver, Colorado. 1935. 21p.

This project was carried on at the University of Denver Elementary Training School to determine some values of the silent film as a teaching aid. The school consists of eight regular teachers who serve as critic teachers, twenty-five student teachers, and nearly three hundred elementary pupils from kindergarten through sixth grade. A total of 75 reels of educational films was used by the teaching staff during the four-month period ending May 31, 1934. At the beginning of each month a committee of two or three teachers selected the films to be used during each of the following four weeks. Available films were studied carefully and films were chosen which appeared to correlate closely with the phases of subject matter to be presented in the classrooms. The films were shown in a room fully equipped for showing films. The schedule was designed to give the children of each room opportunity to see at

least one film per week. Frequently the same children saw two or three films per week, depending upon the number of available films correlating with the course of study. At times children of two or three rooms came together to see films of general interest, such as *Mount Vernon,* or *Abraham Lincoln.*

No attempt was made to make a scientific experiment of the project, nor were tests given to check on results. The purpose of the project was to attempt to discover the various problems involved in the effective use of films in the classroom, and consequently teachers' judgments and reports were considered satisfactory evidence. During the progress of the project, the teachers kept notes on pupil reactions, and on various film techniques which resulted in improved pupil responses.

Several faculty meeting discussions were centered around techniques for effective use of the classroom film. These were in the main an exchange of experiences on the part of the staff members in the use of films.

At the close of the four-month period, each teacher was asked to give her opinion of the film as a teaching aid under the following five heads: (1) types of films found to be most helpful; (2) how films may be used effectively to supplement classroom teaching; (3) effective classroom techniques; (4) values derived from the use of films; and (5) limitation of films for effective classroom use.

The teachers used motion pictures effectively to supplement classroom teaching in several ways: to terminate a study, to introduce a new study, to follow a class discussion, to precede a class discussion and thus furnish an enriched background, as a quick means of review, as a graphic portrayal to reinforce knowledge and understandings already gained.

The following statements were made concerning effective teaching techniques in the use of motion pictures:

1. The teacher must be thoroughly familiar with the film before permitting the pupils to see it.
2. The teacher should discuss with children in advance the points to be looked for.
3. When possible, children should be prepared for the film through discussions, stories, or still pictures.
4. The subject matter in films should correlate with the classroom work, and films should be shown only as the need arises.

5. As the film is shown, points of importance may be stressed by the teacher. This depends somewhat upon the type of film. It is possible for certain pupils to make a "preview" of the film, and make comments as the class views it.

6. Certain films, given for purposes of appreciation, should be run without comment. In cases of this kind, pupils must be carefully prepared for the film. The technique is similar to that of the appreciation lesson in art or music.

7. With some films it is profitable to stop the machine at certain places for discussion, and then go back over parts of it to observe points missed by a majority of the class.

8. With most films it is profitable to have discussions immediately following the showing, or within the near future. Frequently these discussions call for a re-showing of the film to "clinch" certain understandings.

9. Children should be held responsible for information gained through the film. This eliminates the idea that motion pictures are for entertainment only, and gives the pupils a better attitude toward the film as an educative agency.

10. Pupils should not be shown films too frequently or for too long a period. If properly prepared, pupils are at a comparatively high state of concentration while viewing a film, and fatigue will cause a waning of interest within a relatively short time.

Some of the ways in which motion pictures were correlated with classroom work in various subjects and in many grades are briefly summarized as follows:

1. *Beavers.* The teacher used the story of beavers from a book on forest friends. The children related their experiences and also gave information which they had relative to the beaver. The teacher read to them the story. She then introduced the film, *Beavers* and asked them to look for those things they knew, and to be ready to point out the new things they found out. A conversation followed (not directly) the showing of the film. Much interest was manifested throughout.

2. *Story of Milk.* The teacher reminded the children of their study about food in 4B. She told them that they would get to see a film about milk—one of their most important foods. Teacher evaluation states that such a film be used with other films on the same subject, since it only deals with the use of milk as a food.

3. *Events in the Life of Lincoln.* Children were asked to see in the film on Lincoln's life those things which they had read about and seen in programs for Lincoln's birthday. The motion picture used was criticized by the teacher for not having enough of Lincoln's childhood in it, and not enough of his acts of kindness.

4. *Washington.* The showing of the film followed conversation, stories, and use of pictures in the classroom. Many of the places where Washington spent his boyhood, as shown in the film, may be visited today. This film was also found wanting in scenes of the early life of Washington.

5. *Some Friendly Birds.* This film was used to show how birds build nests in the spring, and how they care for their young.

6. *Children of Other Lands.* Films used relating directly to the social science subject matter of these lands were: *Houses of the Arctic, Wanderers of the Arabian Desert, The Netherlands, Houses of the Tropics,* and *The Little Wood Carver.* The children's attention was directed to the particular points of interest, to especially appropriate action, to significant scenes or backgrounds. Frequently the teacher listed four or five questions on the board which the film would answer.

During the showing, the films were frequently stopped in order to direct attention to a significant point, or to provide opportunity for discussion. The films were discussed freely in the home classroom. For instance, after seeing the film on the houses of the Arctic one pupil asked, "But after those dreadful storms, how do they push open the ice doors when the snow has banked up all against them?"

This led to discussion, further reading, and a re-showing of the film for a possible answer. The children are not asked to write reports of the film. I think that knowing that an expression has to be written interferes with the child's spontaneous and whole-hearted entering into it for the sheer interest in the activity itself.

In studying Indian life, we found these films helpful: *Navajo Indian Life, Little Indian Weaver, The Indian Village at the Century of Progress,* and *Santa Fe.* Such comments as these from the children followed the showings.

"I've read and read about looms, but I never have understood before how a real one looks."

"I was interested in the clothes. Even when they wore modern clothes they always had something Indian mixed with them."

"I'd like to see that picture a few more times and then maybe I'd understand how they weave the design in."

7. *Cotton.* The film, *Cotton: Dixie's Great Crop* helped to make more vivid the processes of soil preparation for cotton, planting, gathering, and methods of delivering cotton to the gin. The pupils were prepared for the film by asking them to observe the following three points as they viewed the film: What did you like best in the picture? What was the most interesting thing shown? Why? Look for something new that has not been found in our social science reference material.

The parts they liked best, according to their responses, were: picking the cotton; man carrying bag hitched to suspenders; weighing of cotton; comparison of amount of cotton grown in U.S. with other countries.

The most interesting scenes in the film to the children were: Negro living quarters, where they worked, and the duties of the supervisor; the spreading of poison by airplane to kill the boll weevil; and kinds of harrow used in cultivating fields.

New facts obtained through the film were: weighing of cotton at the end of each row in order to learn how much each row produced; seeing the boll weevil attempting to enter the bud of cotton; how cotton is cared for day and night; and how soil is prepared for growing cotton.

8. *Conquering the Desert.* This film is a picture of giant cacti being cleared from the Arizona desert in the Salt River Valley, the harvesting of the cotton crop by the Mexicans, and the shipping of cotton to Connecticut. The entire process of carding, spinning, and weaving is given in detail. This picture was shown to the class when the study of weaving and dyeing was begun. The film aroused the pupils' interest in weaving. It correlated nicely with our study, as one father had brought into the room a box of samples showing the various stages in the spinning process. Following are some questions asked by the class after the film showing:

Why do they not spin cotton by hand?
Why did the man stretch the cloth?
How did he stretch it so far?
Why was the cloth so strong?
Why did the bush move when the ground was being cleared?
Why didn't they make thread before they wound it into balls of cotton?
Why are two strands of thread put together?
How is thread colored?
Why did they press cotton in a box?
What was the thing pressing the seeds?
How did the people cook on such small stoves?
Why was the Egyptian on the rocks?
Why was the picture shown in Egypt first?

Brérault, Jean. "Report on the Use of the Cinema in Primary Teaching." *International Review of Educational Cinematography.* 6:429-41. June 1934.

1. Place for projection. If the film is to be part of the lesson, it is important that it be shown at the opportune moment in the classroom. If the pupils are obliged to get up and go to another room to see the picture, it is clear that the rhythm of the lesson will be broken.

2. Film showing. The technique will vary with the purposes to be achieved. One or more showings may be needed, depending upon the subject at hand.

3. Comment. It may appear advisable to comment while a film is being run. This is an error, however, which in practice will not fail to give unsatisfactory results. Verbal comment, when used, must be made at just the right moment, and not a second earlier or later. The teacher should usually make his comments before the projection rather than afterwards.

4. Sound. Where explanations are needed to accompany a film, the addition of sound is more efficacious than the teacher's words. The use of natural sounds, such as cries of animals, noises of machines, etc. may justifiably be made for primary teaching. But a teaching sound film ought not be 100 per cent sound. Unlike the situation in the theatre, it is unnecessary to fill in silent intervals with music.

5. Explanatory notes. Teachers' guides can be very helpful when they contain a description of the scenes, with subtitles or spoken comments. They may suggest the form of lesson and place in the curriculum in which the film might be used, but merely suggest. Such a manual might also give the circumstances under which the picture was made, its date, and some episodes connected with the shooting of the film. It might also give a list of lantern slides for supplementation.

Eads, Laura Krieger (Erpi Picture Consultants, Inc.) "Utilization of Talking Pictures in the Primary Grades." In *A Program for the Utilization of Audio-Visual Teaching Aids in Evansville, Indiana.* Erpi. N.Y. 1935. p. 66-71.

Some general principles underlying the use of sound films for primary instruction are:

1. The talking picture is most effective in the primary grades when it is used as an integral part of a broad and well-

planned unit of instruction and when it is well integrated with classroom activities.

2. The talking picture should be presented several times during the study, at various phases of the unit of instruction.

3. Each child should have in mind a specific objective for each film presentation.

4. The teacher should have a distinct purpose for presenting the film each time.

5. Before the first presentation it is important to introduce the unit to the pupils.

6. Especially after the first presentation, the children should be allowed to discuss the pictured material immediately.

7. Unusual types of photography should be explained to the children.

8. The filmed objects and series of scenes should be explained whenever necessary for a correct interpretation on the part of each child.

9. Do not teach the pictured material alone.

10. It is essential that the teacher be thoroughly familiar with the film before beginning a unit.

Keliher, Alice (Progressive Education Association, N.Y.) "Visual Aids in Beginning Reading." *American Childhood.* 14:no.7:16-18. March 1929.

Excursions, classroom exhibits, lantern slides, photographs, stereographs, and pets may all be used effectively to provide a common experience to all the children and stimulate their interest in learning to read. It is preferable to use the actual experience whenever practicable, and resort to the pictured representation of it only when the actual experience is beyond reach.

If the teacher shows the proper degree of interest in visual aid material she will find that the children will never tire of bringing materials to school. Children will bring to school those things for which they care most, and from which much reading should evolve.

Cook, Gertrude S. (Edison School, Pasadena, California) "How We Are Fed." *Educational Screen.* 10:73-6. March 1931.

In a first grade class the work in social studies was enriched as far as possible by the use of field trips, specimens, illustrated stories, and a motion picture.

For example, the unit on wheat was introduced by a specimen of a head of wheat. The processes of growing wheat in former times and in foreign countries, and how wheat is converted into bread were then discussed. Pictures of flour mills, grain elevators, freight cars, etc. were shown. Children brought samples of other grains. A grain of wheat was placed in a tumbler of water and its germination followed. The growing of other grains, such as rice, was described. The class took a trip to a flour mill and then to a bakery. Upon its return to school, the class related the things seen. The teacher recorded these experiences, which were placed in booklet form, becoming the children's first experiences with reading.

In connection with the unit on dairying, the children had occasion to be exposed to many experiences. A two-reel motion picture on dairying stimulated interest in how ice was made. A trip to an ice plant resulted.

At the end of the semester each child had a typewritten copy of the class' "First Book," relating all the experiences of the term. At the last primary assembly period, one of the children read the story to the other children.

"Third Year Nature Study Lessons." In *Handbook for the Use of Visual Aids.* Bulletin No. 18. Board of Public Education. Pittsburgh, Pa. 1929. p. 49-53.

A third year nature study lesson treats of animals at the zoo. Pictures of the animals are used prior to the excursion to the zoo. Following the trip, the children discuss where each animal lives; they learn to recognize the name of each animal; they tell a story for each and write short sentences; they attempt to show the animal in his natural environment through drawings; they see lantern slides, and as a review of the unit a motion picture, *Babies of Wild Animals,* is used.

Lampe, Felix (Germany) "Films in the Schools." *International Review of Educational Cinematography.* 5:12-19. January 1933.

Motion pictures shown to young children proved to be very effective. Pantomime was promptly interpreted for what it was supposed to represent. The children were able to make deductions along the desired lines merely from seeing a film.

Motion pictures can be used to develop powers of observation and seeing relationships. The incident is described wherein a group of young boys were shown a film of elephants, which they had never seen in any form or picture. After the picture, the children were asked to describe what they had seen. They gave what they thought was the expected reply. "The African elephant has four toes in the forefeet, and three in the hindfeet." The motion picture had been on the Indian elephant and had not given any occasion for noting the toes of the elephant. Instead of recounting what they had seen, the children were merely calling to mind some particular fact from the general number of facts which they had succeeded in remembering.

These children were living examples of the utilization of a purely mechanical memory without any independence of mind, without initiative in the matter of experience; things which as a matter of fact can only be obtained through a patient use of the faculty of observation.

Rowland, Lida (Teaneck, N.J.) "Visual Aids for Kindergartens." *International Review of Educational Cinematography.* 6:7-8. January 1934.

When using motion pictures for young children, projections should be brief, sub-titles should be suppressed, and where talking is introduced into the film, the comment should be suited to the mentality of the child. Sound and music, when included, should not be excessive. The pictures should deal with very simple phenomena, especially those which directly concern the child's life, such as community situations, or pictures of animals.

Poole, Irene (Akron, Ohio) "The Motion Picture in the Classroom." *Educational Screen.* 10:169-71. June 1931.

This study was conducted in an Akron elementary school in 1930 to determine the best methods of presenting motion pictures to mixed elementary groups. In approaching the study, it was assumed that educational pictures may conform in subject matter and purpose to at least one of three general classifications: (1) those which illustrate certain definite facts and processes; (2) those which present new experiences to the observer; and (3) those which entertain, either by narration, amusement or aesthetic appreciation. The tests in this study

measured only retention of facts, since it is obviously impossible to tabulate the degree of entertainment, appreciation, or new experience attained.

Six possible methods of presenting motion pictures were used with fourth, fifth, and sixth grade children:

1. Informal discussion by children while viewing the film
2. Lecture by the teacher during the presentation
3. No talking or discussion at any time in the classroom
4. Discussion of the film subject, directed by student chairman or teacher, preceding the presentation of the film
5. Discussion of the film, directed by student chairman or teacher after the presentation
6. Combination of these last two. Pointing out things to be noted and discussion of the subject before filming, with discussion of the materials presented after the filming

Each film lesson provided for fifteen to twenty minutes of discussion. Objective tests were given after each discussion period, and approximately one week following the viewing of a film uniform tests to measure retention of facts were given to all the groups.

The results obtained from the five tests, covering eighteen different situations, seem to indicate that facts observed in motion pictures are better retained by children if there is no introduction to the subject of the film, but a review and discussion of the material presented after the film has been shown.

If the children are to receive the fullest benefit from the moving picture, we must assume that their teacher shall have previewed the film and made herself thoroughly familiar with the subject matter presented. Then it will rest with the arbitrary decision of this teacher whether or not any mention of certain outstanding facts is made before the children view the film. The tests described gave no conclusive evidence that fourth grade children were able to grasp proportionately more facts than the sixth grade groups in situations involving introductory discussions.

Some older children of the seventh and eighth grades still like to feel that movies are primarily for the purpose of entertainment. They prefer no discussion of the picture whatever in the classroom. There were some children who preferred discussion of pictorial material.

Whether the discussion is led by a student chairman—a capable one, of course—or by the teacher matters little in the

opinions of the children. However, some comments on this point were:

"We sometimes waste a lot of time by repeating or talking about things that are not very important."
"The teacher can ask better questions."
"The teacher has been places and can tell us more about them."
"If a chairman knows a lot about the picture, he can have a good discussion."

Although there is some drill in speech and parliamentary procedure when using a pupil chairman for discussion, the advantage of the teacher's wide reading, varied experience, and broad travel should not be overlooked.

Dorris, Anna V. "Visual Instruction in Other Subjects." In *Visual Instruction in the Public Schools.* Ginn and Co. 1928. Chapter VII, p. 307-68.

This chapter considers the use of visual aids in natural science, primary grades, health education, literature, intermediate, secondary subjects, fine arts, and household arts. In all subjects of the school, the plan of attack should be informal and the interest developed in one subject should be carried into related subjects as well. No subject should be taught in any grade as a thing apart—as a separate subject—but rather as a contributing factor of the great mass of valuable knowledge which tends to enlighten and enrich life. Nature study, for example, can carry over into art, music, and literature.

The use of visual instruction should enrich the experience of the pupil, substitute concrete images for indefinite ones, and furnish new backgrounds for future comparisons. This type of teaching demands forethought and planning on the part of the teacher, but the effective results more than justify the extra time and energy expended.

Baumeister, Emeline (Principal, Campbell School, Sandusky, Ohio) "Classroom Films in Use." *Classroom Film.* 1:no.5, 2:no.1. December 1935, February 1936. Available without cost from Eastman Teaching Films Division, Eastman Kodak Co. Rochester, N.Y.

See the original article for ways in which silent films were used in the teaching of nature study, social science, geography, reading, health, and history.

Emery, James Newell (Principal, James C. Potter School, Pawtucket, R.I.) "The Motion Picture As a Classroom Aid." *Educational Screen.* 9:164. June 1930.

Dieffenbach, Charles T. (Principal, J. Hull Browning School, Tenafly, N.J.) "Student Activity in a Visual Aid Program." *Educational Screen.* 16:11-12. January 1937.

A motion picture club, organized as an extra-curricular activity, constitutes the projection force of the school. The projection force is made up of forty boys and girls of fifth and sixth grades who have been recommended by their respective teachers, not for high scholastic ability, but as students who would be valuable to the club, and whose membership in the club would be valuable. In addition to the after-school meetings, the members learn the operation of projection equipment, and of radio equipment. They are assigned to assist those teachers who desire such assistance, in the operation of equipment. The projection force delivers all the necessary materials to the classroom, prepares the room for projection, and later returns the apparatus to the proper center. Each member strives for the rank of first class operator, radio operator, stage manager, or lantern slide operator.

This plan is considered feasible because it fits the philosophy of education of the principal, by motivating learning through intrinsic values; by a self-controlled rather than a super-imposed plan; by its use as a practical period for character-molding. Further, materials are received and returned to their sources promptly, all of the staff knows all of the material available weekly, and a record of values is permanently obtained.

Motion pictures have been found useful occasionally in developing certain skills. *Drawing skills* whose basic element is motion may be effectively taught through especially adapted motion pictures. The article by Perkins in this section, and that by Ulp [5] will be suggestive for the teaching of drawing skills.

[5] Page 234.

Perkins, Elizabeth Ward (Woodbury School of Applied Observation, Boston, Mass.) "Drawing from Motion Pictures." *Educational Screen.* 10:105-7. April 1931.

A drawing class at the Children's Art Centre in Boston, consisting of beginning students of all races and ages, was given films from which to draw. Later they were asked to draw from moving animals at the Zoo, which would have been impossible without the previous training in drawing from a moving object.

This technique was used in a Summer School conducted by Charles Woodbury, and in the Massachusetts Art School in Boston, under Royal Farnum, 1927. The results in the latter case were so satisfactory that a course in Mental Training through drawing was established, based on and illustrated by drawing from motion pictures. In 1929, the method was initiated in all the classes at the School of the Chicago Art Institute.

The results, with able teachers in charge, were important both for a continuous training in the arts and in coordination with other school subjects. It was proved that talent is not necessary in order to be able to use a graphic language. If motivated by interest, anyone can draw, according to his capacity to think clearly about what is seen.

An example of the procedure used in drawing from a moving object is to have a class of boys drawing from a football film. When the drawings were exhibited, questions were asked in connection with the football tactics illustrated. "Is that a good tackle? Is the man with the ball running fast enough to make a touchdown?"

Although the proportions of the figures may be inaccurate, they possess a living quality, or they do not, and the boys are keen judges. A discussion on proportion will usually develop, and improvement in proportion follows of necessity after the action has been expressed.

Some of the objectives of teaching drawing with films are:

1. To focus attention
2. To make quick choice of essentials
3. To gain power of feeling and expressing motion
4. To prove observation
5. To prove and improve memory
6. To gain a standard in proportion

7. To improve the quality of line
8. To demonstrate lack of information
9. To remove the fear of drawing in beginners
10. To bring the world into the classroom
11. To advance the time when expression in line will be as common as in speech and writing
12. To force students to think for themselves.

Many advantages are claimed for the use of visual aids in the *social studies.* These advantages include gains in information, increased interest, stimulation of thought, stimulation of curiosity, changes in attitude, and the like. Skinner reports an experimental study in which slides, stereographs, and movies were involved.[6] He concludes that the more varied the forms of visual aids, the greater the gains.

The unit of work as conceived by Hoke illustrates the desirability of careful planning on the part of the teacher as to the exact role of each motion picture used. It indicates in a most concrete fashion the way in which films may be used to promote socially desirable objectives and independent thought.

The use of films, supplemented by slides or other types of visual aids, for geography instruction is discussed in several articles. Courtney gives six guiding principles for using visual materials, and some of the outcomes of a study of Yellowstone National Park in which these principles were applied. Bishop found pupil-made slides, Keystone slides, photographs, and films helpful in developing a unit on Asia. Myers has published several lesson units in geography using slides and films. An outline of the unit on the Panama Canal is here summarized, and additional lesson units cited.

A lesson plan for the study of the beef industry, reported in the Pittsburgh, Pa. Handbook shows clearly the integration of the excursion, stereographs, slides, and motion picture in the development of the unit. The article by Ramsey similarly

[6] See also analysis of this study in Chapter 5 on Research page 365.

presents a well-rounded unit using the visual aids available from a museum for teaching life in the African Congo.

Visual aids which are not projected are discussed in the article by Dexheimer. It is interesting to note the quotations from pupil reactions to picture reading in geography. The article also includes a listing of some uses of still pictures for the teaching of geography, and some guiding principles for the teacher. Proudfoot states that photographs are an effective medium for developing "reasoned memorization" of facts. He uses photographs to provoke questions, and thereby to contribute to a balanced understanding of the "cultural-natural adjustment complex" of the region being studied. He uses photographs to test factual information. It is doubtful whether this stress upon memorization, whether it be reasoned or unreasoned, is still widely held by educators.

The course of study for geography of the London Board of Education has divided the teaching of geography into three stages. The Central Information Bureau for Educational Films points out how films may be used in the development of each of these stages.

Skinner, Charles Edward (Miami University, Oxford, Ohio) and **Rich, Stephen Gottheil** (Essex Falls, N.J.) "Visual Aids in Geography: An Experiment." *Elementary School Journal.* 25:700-5. May 1925.

This experiment was conducted in 1923 in two New York City schools in a congested Jewish section of the city, one a junior high school and the other an eight-year elementary school.

The experiment was carried on during February, over ten teaching periods of forty minutes each, and three resting periods of equal length. In the first school, one class was taught with text alone plus some wall maps; another class by textbook, stereographs, and lantern slides; a third had all these aids and the addition of moving pictures. All the classes used the same text and were taught by the same teacher. The "text class" met the first period of the school day; the "slide class" met the

second period after an arithmetic lesson; and the "movie" class met the fourth period after a spelling lesson.

In the second school only two groups were used, a text class taught during the third period after a lesson in grammar, and the slide class during the same period after word-study. The first class was taught by a woman teacher, the other by a man.

Conclusions. Although the difference in attainment due to the use of visual aids is very small, the gain in retention of information, interest in geography and in pupil morale was distinct. The more varied the forms of visual instruction, the greater the gain. Nevertheless, differences between teachers, and between the texts gave rise to at least as great differences in results as did the presence, variety, or absence of visual aids. The gain due to thorough visual instruction, using all the visual aids, is sufficiently great to warrant expenditure of school money on them.

Hoke, G. W. (Eastman Teaching Films, Inc.) "Planning Instruction with Classroom Films." *School Executives Magazine.* 52:265-7. April 1933.

The series of lessons outlined in this paper indicate one way to plan instruction to promote the acquisition of a sequence of ideas that will help the learner to understand life about him and to adjust himself to it.

As an illustration, a junior high school teacher of social science decides to develop a unit of instruction leading up to the idea of *personal responsibility* for the faithful discharge of economic duties. With this as a starting point, and the goal towards which the instruction is to be directed, the teacher thinks back, step by step, to a beginning point for the instruction that is well within the range of experience, interest, and ability of the members of the class.

After due deliberation, a line of thought somewhat like the following may be developed:

Personal responsibility is a consequence of *interdependence,* set up by the *exchange* of goods and ideas produced through *division of labor,* in *round-about processes* of compensating for a *scarcity in nature,* of the things that satisfy *human wants.*

This analysis yields a sequence of seven ideas. From the idea of human wants as the beginning point of instruction, there

is a continuous progress in difficulty and complexity up to the idea of personal responsibility.

This sequence of ideas may be developed through language, object lessons, field trips, laboratory work, and classroom films. A series of motion pictures are selected by the teacher which will help to introduce each of the seven ideas. Each film may then be seen to illustrate all seven ideas. The relationship between the films and the seven objectives may then be charted, somewhat as follows:

Film	Seven Objectives to be Achieved						
	1	2	3	4	5	6	7
A	*1A*	2A	3A	4A	5A	6A	7A
B	B1	*B2*	B3	B4	B5	B6	B7
C	C1	C2	*C3*	C4	C5	C6	C7
D	D1	D2	D3	*D4*	D5	D6	D7
E	E1	E2	E3	E4	*E5*	E6	E7
F	F1	F2	F3	F4	F5	*F6*	F7
G	G1	G2	G3	G4	G5	G6	*G7*

KEY

A Pueblo Dwellers	1. Human Wants
B The Arid Southwest	2. Scarcity in Nature
C Irrigation	3. Round-about Processes
D Wheat	4. Division of Labor
E Gold	5. Exchange
F The Automobile	6. Interdependence
G Pig Iron to Steel	7. Responsibility

Each film, then, would be presented to illustrate one outstanding human relationship; and incidentally, each of the other six relationships might be distinguished to show that all of these ideas are inter-related.

The following suggestions and questions indicate something of the richness of the instruction material charted:

Presentation: (1A. Human Wants—Pueblo Dwellers)

1. Approach. Have the members of the class discuss what they know about human wants for food, shelter, tools, and safety.
2. Discussion. What evidences are shown in the film that Pueblo Dwellers want food, shelter, tools, and safety?

. . . .

Presentation: (6F. Interdependence—The Automobile)

1. Approach. Have the class discuss how the exchange of goods and ideas makes people dependent upon each other.

2. Discussion. What evidences of the interdependence of people are shown in the film of The Automobile?

Reorganization Review:

(F1) What human wants are satisfied in the manufacture and use of automobiles?

(F2) Cite some of the things not supplied by nature that had to be produced before automobiles could be built.

(F3) What round-about processes are involved in the manufacture?

(F4) How has division of labor made possible the production of automobiles on a large scale?

(F5) How would it affect the manufacture of automobiles if the materials used had to be secured through barter?

Integration:

(6A) Why is there so little dependence of Pueblo Dwellers on the rest of the world?

(6B) What evidence as to interdependence, or the lack of it is shown by the Navajo Indians in the Arid Southwest?

(6C) In what ways are people living on an irrigation project dependent upon each other, and upon the outside world?

(6D) In what ways is there an interdependence between large scale wheat farmers, on one hand, and railroad men, bankers, and teachers on the other hand?

(6E) In what ways is gold mining dependent upon other industries?

These and many other questions are suggested as concrete illustration of the way in which a sequence of ideas may be promoted by challenging active participation in the discussion of specific situations. This medium of instruction makes it possible for the learners to do the discussing, the function of the teacher being primarily to direct attention, to afford opportunities to all for self-expression, and to encourage a readiness to revise old ideas as experience ripens.

Courtney, Grace A. (Principal, Halls Grove School, Pittsburgh, Pa.) "Class Demonstration: Fifth Year Geography." *N.E.A. Proceedings.* 1934:779-80.

A lesson in fifth grade geography on the topic, "Vacation Trip to Yellowstone Park" was supplemented by slides, maps,

pictures, and films. Lantern slides were used to introduce the unit, motion pictures to present the content material, reading references to interpret and discuss the film, and a check up on the unit made through test slides. Some of the outcomes of this unit were:

1. A desire to visit Yellowstone
2. An appreciation of the pleasures offered there
3. An appreciation of the opportunities of all national parks
4. Interest in and appreciation of the natural beauty of the United States.

In utilizing these visual aids, six guiding principles have been formulated:

1. Visual aids should supplement the course of study.
2. They should be grouped around a central theme.
3. Each type has its place in the teaching process and may be used to enrich it.
4. Too much illustrative material may cloud rather than clarify the concept to be developed.
5. Use of visual materials should not be allowed to over-develop passive receptivity.
6. Pupils should be held responsible for definite reactions.

Bishop, Sue (Wollaston School, Quincy, Mass.) "A Geography Lesson with Visual Aids." *Educational Screen.* 12: 90-1. March 1933.

Lantern slides made by the pupils, Keystone slides, and a motion picture were used in an intermediate geography class for studying Asia. The general theme to be developed by the unit was that in Asia much of the work is done by animals and people, rather than by machines.

The immediate aim of the lesson was to get acquainted with different types of labor in the Orient. The ultimate aim was to discover that these types of labor depend largely upon the surface of the country, climate, density of population. The methods used to develop the unit were lantern slides, films, geographic pictures, note book work with an oral check-up, and a written test.

The unit was introduced through questions and listings on the blackboard of the animals commonly used for labor, and the places where coolie labor is prevalent. The children then

made slides illustrating a ricksha, furniture mover, beating out grain, a sedan chair, a yak, a Chinese wheelbarrow, and the like. Keystone slides were projected to demonstrate the sawing of lumber in Manchuria, road making in China, Chinese boys plowing in Northern China, etc.

A motion picture was presented to show the contrast in methods of labor between the East and the West. Such processes as irrigating rice fields, loading boats, hauling lumber, hauling freight, and carrying mail were compared.

The children kept a note-book on the unit and reported orally on the materials included. A written test was given to check on the extent to which the aims of the lesson unit had been attained.

Myers, Stella E. "How Trees of the Forest Are Changed into Lumber." *Educational Screen.* 5:48. January 1926.

Myers, Stella E. "How the White Milk of a Tree Is Made into Black Rubber." *Educational Screen.* 5:110-13. February 1926.

Myers, Stella E. "Wheat and Other Grains." *Educational Screen.* 5:242. April 1926.

Myers, Stella Evelyn (Forest Park, Illinois) "A Visual Study of the Panama Canal." *Educational Screen.* 7:30-2. March 1928.

The following lesson plan was used to develop a unit in geography on the Panama Canal, in which about a week was allotted for preparing the students for the content of a motion picture on the subject. Reference books and stereographs were used in the preliminary work. One girl constructed a salt relief map. A boy transferred the information thus acquired to map slides. Children selected slides from the Keystone set to illustrate the unit, and other children prepared oral reports on the slides, using the syllabus. All this served as preparation for the film.

There were three forty-five minute class periods for this preliminary work, and much of the work done by the children was done at home, in the library, or during supervised study periods. There is danger, however, in letting this period of preparation drag, for the child's interest lags and then spontaneity and enthusiasm are lost.

LESSON PLAN IN GEOGRAPHY ON PANAMA CANAL

Topic	Film Content	Slide Number and Title
Geographical Features		a) Slides 1 and 2 made by children; and shown before film.
	b) The film introduces ex-President Roosevelt as the champion of the project. He appoints Generals Gorgas and Goethals on the Canal Commission.	No. 18. Map of Canal Zone. Report by one or more children
Historical Features		c) Slides 12, 13, 11. Generals Goethals and Gorgas; French Engines. Slide 10 or 249. Old French Dwellings.
Housing and Sanitation Problems	d) Film shows administrative features; employees, housing, sanitations, etc.	e) Slides 10 or 249. Slides 14 or 255. Hospital. Slides 15, 16, 17. Battle Alley, Drip Barrel, Builders' Houses.
Engineering Features	f) Film shows drilling, digging, cars loading and dumping dirt.	g) Slides 19, 31, 33, 34, 35. Digging thru a hill, Steam shovel, Digging in Gaillard Cut, Deepest part of Cut. Slides 41, 28. Cement mixers.
	h) Locks, dams, etc.	i) Slides 20, 21. Spillway. 22, 23, 24, 25, 27, 42, 30. Turbines, Gatun Locks, boats in locks, emergency dam.
	j) Landslides undo much labor.	39, 40. Pedro Miguel and Miraflores Locks.
	l) The concluding portion of film reveals task of cleaning up the slides, and opening of Canal.	k) 36, 37. Beginning of slides at Gaillard Cut. m) 44, 47, 48, 49.

"Projects Enriched by the Use of Visual Aids." In *Handbook for the Use of Visual Aids.* Bulletin No. 18. Board of Public Education. Pittsburgh, Pa. 1929. p. 67.

A fifth year lesson plan for teaching a unit on "Our Beef Industry" to fifth year geography students includes various types of visual aids, correlated with the city course of study, with specific reference to the materials available from the Pittsburgh Department of Visualization.

The lesson plan would have a sequence somewhat as follows:

1. Preparation for a trip to the Pittsburgh Stock Yards
2. School journey to the stock yards
3. Discussion of the trip
4. Motion picture film, *A Cattle Ranch,* to show beef cattle in their natural environment, to show the daily duties of cowboys, to illustrate skill in the round-up of cattle, the use of the lasso, branding of calves, and the like. There is provision for preliminary and follow-up discussion of this film.
5. Supervised study period in which stereographs, reference books, and outline maps are used as preparation for the socialized recitation to follow.
6. Life on the cattle ranch. A discussion lesson, using six Keystone slides, and three from another set.
7. The by-products of the meat-packing industry.
8. Conclusions from this unit, based on the materials used. Test.

Ramsey, Grace Fisher (Associate Curator, American Museum of Natural History, New York City) "Integration of Motion Pictures with Other Visual Aids." *National Board of Review Magazine.* 11:4-5. March 1936.

The following lesson unit is suggestive of the ways in which some of the visual aids available to teachers in the New York City schools from the American Museum of Natural History may be integrated into a meaningful lesson on life in the African Congo.

In order to study the problems of climate involved in tropical countries, it is impossible to use the field trip. But specimens of materials used by natives of the African Congo are available from the museum, including a piece of bark cloth made from the inner bark of a wild fig tree, a very short grass skirt, a brass armlet, a head ring for carrying burdens, a field basket used in bringing back to the village the plantains and the manioc roots which form the staple food of these people.

Iron axes, spears, and daggers made by native iron workers are also available, as are musical instruments. Another type of visual material which may be used is a miniature habitat group or a diorama, showing a native village with tall forest trees, the inhabitants engaged in various activities, such as pounding out bark cloth, forging iron, making pottery, beating the large wooden drum to broadcast messages to other tribes, and so on.

A motion picture is used to show a native in the act of pounding a piece of bark into shape, and the smelting of iron ore to be pounded into a knife. This medium, together with the specimens which the students may handle, and a few selected, well-colored lantern slides projected to furnish a more realistic background for these Congo peoples, and some photographs and stereographs will provide an integration of visual aids that will result in a true conception about how the natives of the Congo adjust themselves to their climate and succeed in their problem of living.

The use of pictures, both still and motion, with intelligent understanding and guidance by the teacher and the introduction of realia from the museum will give a reality and meaning needed in all of our education today.

Dexheimer, Lora M. (Supervising Teacher, Illinois State Normal University, Normal, Illinois) "Systematizing the Use of Pictures in Teaching Sixth-Grade Geography." *Yearbook of the National Society for the Study of Education.* 32:507-19. 1933.

The following account describes an attempt to combine picture study with text and reference work, with the definite aim of stimulating the pupils' interest and of making more real the life and places studied. The work was done during an eighteen-week period in which the continent of Europe was studied. There were eighteen sixth-grade students, taught entirely by a student teacher in the sophomore year under the guidance of the supervising teacher.

Standards for selection of pictures. These were, roughly, (1) Does the picture show some phase of man's activity in relation to his environment? (2) Is it simple enough for the pupils' comprehension? (3) Does it help to illustrate, verify, extend, explain, or compare knowledge already gained? (4) Does it stimulate further inquiry or inference concerning the

subject illustrated? and (5) Does it contribute to geographic thinking; that is, does it cultivate the ability to see and interpret relations between man's activities and his natural environment?

Some methods used with pictures:

1. To introduce a unit. Children were given a set of pictures of various countries of Europe, and asked to tell some kinds of work that people do there. Among the comments were:

"This picture is in England. There are sheep and there is a shepherd driving them. That tells me that they don't have a lot of traffic on this road."

"In this picture I see two men harvesting oats in Russia with an American harvesting machine."

"In this picture they are loading wheat for export from Russia. This makes me think that they raise more wheat in Russia than they use."

2. Pictures used to supplement study. After some study of how Europe feeds its people, with short written reports on what they had learned, pupils were asked to mention any new information which a series of pictures offered. Some of their comments were:

"My picture shows that in countries of Europe many women work in the fields. I guess they get less pay than men do."

"I learned that in the Balkan countries cattle are used to tread the grain out of its hull instead of thrashing it. That is a slow and backward way to do it. It's not very clean either."

"Children work in grain fields in central Europe. Just as soon as they are able to do some duty it seems that they take their places in the fields. This must be where the grain is raised by hand work. The fields look small."

3. Pictures used as an aid in making a summary.
4. Pictures to begin a topic.
5. Pictures for group work in outlining a study.
6. Pictures used as a test.
7. A journey with pictures.
8. Pictures to give a rapid preview.
9. Organizing a sequence with pictures.
10. Projected pictures for review.
11. Pictures for comparison with other countries.
12. Pictures used to develop ability to relate what is already known to new situations.
13. Use of pictures for entertainment, in which projected slides are used before an audience to illustrate the work of the term.

Comments and conclusions:

1. The pictures used were almost wholly of the type showing man's relation to his environment. They were always chosen because of some bearing upon the unit of study, and when necessary, to show sequences.

2. Picture study was made meaningful, not a mere diversion. Each pupil or group was held responsible for a definite result. An attempt was made to provide a common experience through pictures for understanding the discussion.

3. The teacher was constantly aware that this was a lesson in the geography of Europe, not simply pictures.

4. Place geography and map exercises supplemented the pictures.

5. The number and variety of pictures used in any exercise were limited. A few pictures, definitely assigned and thoughtfully studied, are best used.

6. The use of pictures was not the only means of instruction for geography, but it was an important means.

7. Picture exercises lack sequence and completeness and can only show man's activities with his environment. An interest in people and their use of environment with young pupils, however, can develop further interest toward a more exhaustive study.

8. There were two types of pictures: those showing clearly some definite meaning, and those suggesting or stimulating inference.

9. Better results in understanding came from using pictures showing simple rather than complex processes.

10. The pupils were greatly stimulated in this study to an appreciative use of the pictures in their texts. Textbook illustrations are often unrelated to the text, representative of exceptional situations rather than everyday life, and fostering a provincial "superiority complex" rather than a sympathetic understanding of other people.

11. From the standpoint of the teacher's purpose, the pictures may be classified as: (a) those calculated primarily to arouse interest and a desire to investigate further; (b) those selected to aid in an interpretation of texts; and (c) those chosen for checking and testing acquired knowledge.

12. Legends with pictures were variously used.

13. Some of the advantages claimed with this use of pictures are: (a) pictures give details which supplement and vitalize printed statements; (b) they help children to develop powers of geographic thinking; (c) they facilitate the learning process by an appeal to curiosity; (d) they develop a habit of studying and evaluating textbook illustrations; (e) they make all learning more effective, but especially that of children with slow reading ability; (f) they provide concreteness to classroom discussions; (g) the degree of interest and enthusiasm, the clearness of the images, the growing realization of distant peoples as workers like ourselves, the avidity with which pupils and teacher attacked new problems made the geography hour an anticipated pleasure in each day's work.

14. Suggestions for further investigation:

(a) The types of studies most aided by using pictures
(b) The methods of assignment and study most efficient for each
(c) Exact means of evaluating results
(d) Question of learning vs. entertainment
(e) Most effective ways of using legends
(f) Suitable classifications of pictures
(g) Use of pictures to overcome reading handicaps.

Proudfoot, Malcolm J. (University of Chicago) "The Use of Photographic Material in Teaching Elementary Geography." *Journal of Geography.* 31:381-90. December 1932.

Central Information Bureau for Educational Films, Ltd. "The Film in Relation to the School Curriculum: Teaching of Geography." In *Film Progress*; a supplement to the National Encyclopedia of Educational Films. July 1936. London, England.

The Board of Education divides the teaching of geography into three stages, each of which may use educational films in achieving its objectives:

1. "To awaken the children's interest in their surroundings, both in the phenomena of nature and in the lives and habits of the people, and to compare with these the lives and habits of other peoples living amongst different surroundings."

An attempt should be made in this stage to include typical scenes from the main climatic regions of the world, rather than from one single region, and show how food-getting, clothes, houses, and travel differ. Constant use of well selected pic-

tures, photographs, lantern slides, etc. and of natural specimens should be encouraged. By no means of which we know can the lives of other nations be brought so vividly to the minds of small children as by journeys to other countries through the motion picture.

2. "In the second stage he (the teacher) will endeavour to impart a general knowledge in broad outline of the geography of the world. The children should, for example, gain some knowledge of the distribution of land and water, become acquainted with important types of land relief and climate, and acquire incidentally some preliminary notions about the industrial and commercial relations between one part of the world and another."

The Central Information Bureau for Educational Films is cooperating with Kodak, Ensign, and other firms of the educational film industry in the formation of a library of films to accompany the geography syllabi.

3. "In the third stage the aim should be to give a clear impression of the world as a whole together with some definite knowledge of its most important regions, especially the members of the British Commonwealth."

Films have been found to be helpful in stimulating further activity on the part of children.

The most widely used series of films for the teaching of American history are the *Yale Chronicles of America Photoplays.* The following summaries indicate some uses made of these films in elementary and junior high school history classes. Delp has made a point of the critical way in which students viewed the films to make the experience meaningful. Lesson plans published by McAteer and Evans, and the Pittsburgh, Pa. Handbook have here been briefly indicated.

Dolezal has extended the use of one of the chronicles, *Pioneer Woman,* to sensitizing a group of young girls of retarded mental ability to the great part which women played in establishing our nation. This awareness was related to experiences in the life of the girls, and the results were gratifying.

Hoek, through a service study in his school, established the value of the Chronicles for children below the junior high school level.

Delp, I. W. (Canton, Ohio) "An Effective Use of the 'Chronicles of America.'" *Educational Screen.* 7:241. November 1928.

Each year the seventh and eighth grade classes make an intensive study of one or more of the Chronicles bearing directly upon the history instruction.

The picture is run, with or without comments as the occasion demands. Pupils take notes. After the showing they fully discuss what they have seen, raising questions as to accuracy, whether possible to have been pictured at the actual site, what other episodes might have been included, what others had better have been shown, what new ideas were noted, and what old ideas contradicted.

Where there is a doubtful point, the film is run over again to be certain of the story. If the disagreement continues, the search is made through reference books. At one time a boy raised the question whether glass should be shown in a Pennsylvania log house, as the film clearly showed. It was an interesting chase after facts which revealed much more than that glass was used at a certain place at a certain time.

Before the picture is introduced, the pupils make a list of picturable episodes. These episodes are then checked against those listed on the synopsis sheet.

After the final showing and discussion, the class prepares a lesson plan or study sheet.

McAteer, Ercel C. and **Evans, Marian.** "Daniel Boone: A Film Lesson." *Educational Screen.* 5:261-3. May 1926.

A unit on the early westward movement in American history for seventh and eighth grade involved reading, study of vocabulary, film characters to be seen in the film, and thought questions following the film showing. Some pupil activities and dramatizations are suggested.

"**Seventh** Year History Lesson." In *Handbook for the Use of Visual Aids.* Bulletin No. 18. Board of Public Education. Pittsburgh, Pa. 1929. p. 57-62.

The lesson plan includes suggestions for motivation, follow-up, socialized recitation, and an objective test for use with the

Declaration of Independence in which emphasis will be placed upon checking the content of the film with information in reference books.

Dolezal, Rose M. "Socialization from the Classroom Moving Picture." *Educational Screen.* 11:121-2. April 1932.

An eighth grade class of girls who were very retarded in their mental capacity was used in this study. The mental ages of the girls in the class were eight, nine, or ten years, whereas the chronological ages were actually fourteen and fifteen years.

After studying the movement of the first settlers into the West during the eighteenth century, and especially the settlement of Kentucky and Tennessee, a film was presented, *Pioneer Woman,* in which the part played by the pioneer woman in the settlement of Boonesboro is depicted.

At the next class meeting the film was discussed in an informal manner. The girls realized, according to this discussion, that "men did not win battles alone." They realized that it would have been impossible to win the wilderness and hold it, if it had not been for the quiet and plodding toil of the brave pioneer women at home, performing their duties even when the dangers and disappointments were great.

A discussion of character and social traits was the outgrowth of this history lesson. The talk centered about the value and need for simple household tasks, the sacrifices which have to be made in order to pave a way. This film tended to show the simplicity of the pioneer women and the undesirability of much jewelry, cosmetics, and elaborate clothes.

A committee was ultimately formed to assist girls who came to school improperly attired, or with highly colored complexions.

Hoek, Floyd G. (Principal, Longfellow School, Teaneck, N.J.) "An Enrichment in a Course of Study." *Educational Screen.* 13:22-5. January 1934.

The three fifth grade classes in the school, after measurement by standardized tests, were divided into three groups according to mental ability. The work in American History was divided into three units, each of which was presented in the three classes in the same way. The teaching in each class was carefully checked and reading material pertaining to each unit was controlled so as to provide a fair basis for comparison.

At the conclusion of each unit of work, one class was shown a motion picture on the subject, a second class was shown slides, and the third class was given no instruction with visual aids. This was immediately followed by a test in all three grades.

Conclusions:

1. .The lower group, when shown a film which supplemented the teaching of the unit, were brought up almost to the level of the superior group that had had no visual work.

2. When the superior group, however, saw a film, such a marked improvement was not shown. The most logical reason for this seems to be that the pupils of the superior group, having greater reading ability, reach their capacity for absorption of subject matter prior to the film showing. Even in this group, however, the results of the test showed the class to be more homogeneous as a result of visual instruction.

This experiment establishes the Yale Chronicles as a possible aid for intermediate grades, whereas they had always been recommended for junior and senior high schools.

In *health education* one of the most important problems is the development of desirable attitudes toward such things as diet, sleep, cleanliness, and the like. Geary has used a health film to introduce a unit, in which a series of school journeys was the outstanding teaching aid. Lindquist describes the successful use of certain health films with a group of children living in a crowded section of New York City, following some of the principles set up by the new progressive school.

Hoke has clearly stated what objectives of health education were to be achieved by using motion pictures, and how these films succeeded in fulfilling the objectives. The technique for using films is compared with that used for teaching silent reading.

Geary, Catherine E. (Elementary Supervisor, Lebanon Public School, Lebanon, Pa.) "A Successful Visual Teaching Program—How It Operates." *Nation's Schools.* 11:39-42. February 1933.

Motion pictures are used with children of second and third grade to develop habits of healthful living. The films used are rated as particularly well adapted to the interests, experience and understanding of these children. The action of the stories is sufficiently slow and uninvolved to make it possible for the children to get a full understanding, while the captions contain words that already are a part of the children's reading vocabulary. The story characters are boys and girls and pets, and persons who are a part of normal child life.

On the first day of developing a unit on Milk, the teacher receives a film guide with suggested pocedures for using and following up a film on the subject. At no time is the teacher told how to proceed. The following day the film is projected by a post-graduate high school student in the classroom. During the first showing the teacher makes some pertinent remarks, but when the film is repeated shortly after, it is run through without comment. Each teacher's initiative is challenged to carry on the most interesting and efficient learning activities in connection with the unit. A few days later, the children are taken on a school journey to a dairy farm, fruit stores, or similar places where the processes of collecting and distributing food are carried on.

School journeys are always carefully planned. The teacher visits the place herself before bringing the children to become acquainted with the things to be seen, in order that the children may be prepared in advance for things to look for. During the trip, the teacher or a representative of the management point out things of interest.

Such activities as reading, oral talks, dramatizations, or the preparation of reading booklets usually follow a film showing and a school journey. The children construct miniature farms, dairies, or stores. They make cheese and butter in the classroom which they share with children in other grades. They plant cereals in window boxes and watch them grow. They relate their stories through pictures, poems, riddles, or songs. All the so-called subjects and learning become part of the health

activity unit. The year's work culminated in a dramatization, "The Garden of Health."

The results of this program are so satisfactory that it should be continued throughout the school over a long period of time. The children learned to know more about milk, bread, cereals, fruits and vegetables than ever before; they appreciate the uses and values of these items to a greater degree, and they have carried back to their homes the lessons they have learned. There is strong evidence that the children were actually making the knowledge part of themselves. The reaction of the children to the whole activity, and toward the culminating playlet indicated the keen interest and appreciation.

Lindquist, Margaret A. (Elementary School Principal, New York City) "A Film-Aided Cleanliness Program." *Classroom Film.* vol. 2, no. 2. June 1936. Eastman Teaching Films, Inc. Rochester, N.Y.

The following unit was developed along the lines of the principles set up by the new progressive schools, in a fourth grade class in a crowded section of New York City.

The problem was approached during the morning inspection period. The special needs of the class for cleanliness were discussed and a list placed on the board. An attitude toward cleanliness was developed, especially with reference to the afternoon gym period. The Eastman film, *Clean Face and Hands* was shown. A discussion was held on the technique of cleanliness as shown in the picture. Among other things the children discussed the articles necessary to maintaining cleanliness.

At another lesson a set of posters on clean face, hands, neck, nails, etc. and the articles used to acquire these were introduced. The posters had been made by a commercial art class in one of the city high schools. The motion picture, together with these visual aids, resulted in the development of two plans. First, the class was going to procure soap and paper towels for use after the game period; and secondly they were going to obtain toilet articles necessary for use at home. One of the children suggested that they build their own health kits.

The teachers permitted the children to order the desired quantity of materials, to distribute them, and supervise their use. Arithmetic was integrated with it by problems on cost per child per term of twenty weeks. The towels come 150 to

the package, and 25 packages to the carton, priced at $1.99 per carton. The children were also allowed to write the letters ordering the goods, and to keep the inventory records up to date.

The students checked one another on the extent to which each was keeping clean at home. Each child was expected to secure and use a personal face cloth, towel, comb, nail brush, tooth-brush, and tooth paste. This was difficult, since many could not afford them. Toweling was purchased by the yard, face cloths were made by the children from discarded towels, the pupils learned to wash and dry their own cloths. Orange sticks and sterilized cotton were used as substitutes for a nail brush. Many bought files. Where combs, nail brushes and tooth brushes could not be procured by the pupils, sample sizes were bought from the manufacturers for the cost of shipment.

When the kits were completed, they were taken home and weekly scores kept of their use. The truth of the statements on these scores was easily verified by inspection results.

As an outcome of this unit, a technique for wash-up with limited facilities after a football game has been developed for the 4A grade. These children, having now progressed to the 4B, continue their hygiene habits. The new 4A class has been invited to send representatives to observe the procedure of their predecessors. The 4B class has advanced to a new study, utilizing the film, *Clean Clothes.*

The teachers of the 4A undertake this health activity each term, this being the school level at which the aid is most needed. Some children report a family interest in the cleanliness habits, and the original classes have undertaken a survey of the extent to which other members of families own and use individual toilet articles.

The fact that the interest continues unabated is proof that the activity has its roots in a vital local problem. The unusual analysis of the techniques of cleanliness is directly traceable to the understandable logic of the motion picture, without which the benefits from the film would never have been derived.

Hoke, Georgie C. (Former Director of Health Education, Malden, Mass.) "Classroom Films in Health Teaching." *Education.* 54:223-8. December 1933.

The objectives of health education are: In the lower grades the teaching problem is focussed on the *how* of health behavior.

In the upper grades it is focussed on the *why*. By planning health instruction that will challenge the child's interest, his attention will be directed on the matter in hand, and he will be provided with impressions that are direct, vivid, rapidly acquired, and accurate. One medium is through language, a medium used throughout life for the purpose of communication. A compensating device for the limitations of language is the classroom film.

In using a film, the teacher should so direct attention before screening that the children will note the pertinent facts as the film is shown. Children will be directed to such matters as, What is it like? How does it work? What is its purpose? The motion picture should be short and pertinent.

There should be few, if any, comments by the teacher during a film showing. This is the practice followed when children are engaged in silent reading, and is similarly applicable to film reading.

Because of the varying richness and difficulty of comprehension in the materials of classroom film for health instruction, no set rule can be made as to the length of film to be shown, or as to the exact procedure in relation to other classroom aids. In some cases the entire film may be shown first as a whole, with subsequent showing of parts of it. In other cases the subject matter of the film may be so rich in new material that pupils cannot pay attention to, or profit from a showing of the complete film first. In such cases it is best to show parts first, and later show the entire film for purposes of review or summarization.

The *science* area has probably been better supplied with good motion picture material than many of the other subject matter fields. Experimental studies show clearly that films can make a very definite contribution to science instruction, especially on the secondary level. A few references dealing with elementary science teaching have been included below to indicate some of the practices in schools.

The Neuner article is an admirable indication of the way in which a supervisor has analyzed the potentialities of the educational film with relation to the elementary science program. This is one of the basic problems now facing the

visual education movement, and one which can be overcome only when all supervisors of instruction have taken the time to evaluate the motion picture as it applies to their situation.

The nature study lesson plan from the Pittsburgh, Pa. Handbook suggests the use of a varied assortment of visual aids, of which the motion picture is recommended to be used for reviewing the unit. The lesson plan which Brunstetter includes in his new book was prepared by a New York City teacher, Miss McCarthy, using sound films in a science unit. Whittinghill describes the cooperation which his Department of Visual Education offers to teachers of general science in properly editing and correlating suitable motion pictures.

Neuner, Elsie Flint (Supervisor of Elementary Science, New Rochelle, N.Y.) "Films as a Supplement to Experience in Elementary Science." *Classroom Film.* March 1937. Eastman Teaching Films Division. Rochester, N.Y.

The teachers and supervisors of science in the elementary schools of New Rochelle have planned the elementary science course of study around the central idea of the child living in an ever-widening environment. In the lower primary grades the child is aided in evaluating his early surroundings, such as his school, the nearest store, his neighbor's and his own back yard, and pets. By the end of the third grade his environment has extended to include a much larger horizon. He is interested in children of other communities and other countries. He wants to know where his food comes from, who makes his clothing, how do animals at the Zoo live in their native habitat, what makes plants grow, and what makes the sun shine? After the completion of the intermediate grades, the child begins to ask questions beginning with "why" and "how" with more frequency than questions beginning with "what."

The ideal way to study our environment in any of its many aspects is to gain first-hand experiences, to answer questions by direct observation. It is impossible to devote the time and the effort necessary to understand all the aspects of science through direct experience. It is therefore desirable to rely upon vicarious experiences for enrichment. The motion picture in the hands

of the elementary teacher in her own classroom, with her own class, offers one of the best substitutes for the "real thing."

The New Rochelle schools purchased five films for science instruction. It was found that these could be used in many different situations, and in connection with a number of different units on various grade levels. It is therefore unnecessary for a school system to own a large number of films in order to begin to fill vicariously the gaps in actual experience.

A chart is offered to illustrate the varying uses which can be made of fifteen films recommended for a minimum library of science films. Each of the films is analyzed in its relation to the entire course of study for elementary science in New Rochelle.

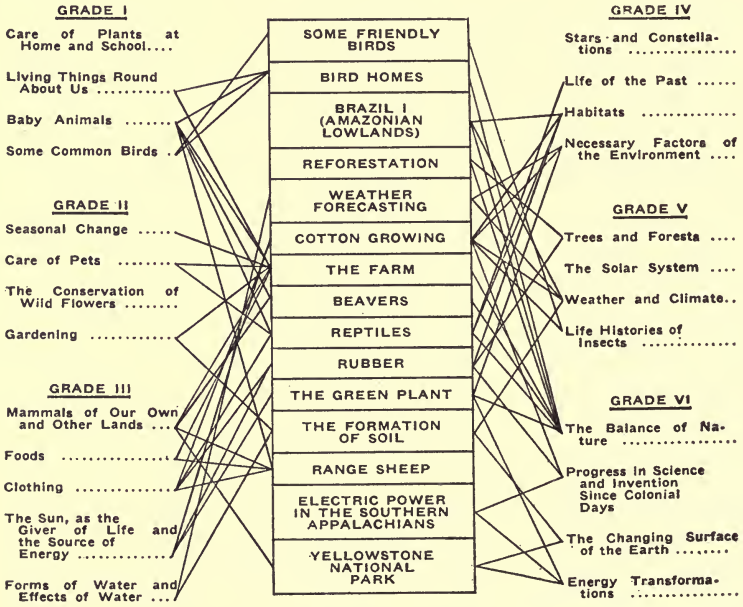

CHART II—A minimum film library, and its application to an elementary science program.

"Third Year Nature Study." In *Handbook for the Use of Visual Aids.* Bulletin No. 18. Board of Public Education. Pittsburgh, Pa. p. 49-53.

Already reviewed on page 160.

McCarthy, Kathryn (Elementary School Teacher, Brooklyn, N.Y.) "Outline of a Typical Unit Taught with a Sound Film." In *How to Use the Educational Sound Film,* by M. R. Brunstetter. University of Chicago Press. 1937. p. 142-50.

The first lesson provides for a general overview of the study of erosion, the showing of an entire film, followed by short compositions, poems, and the beginnings of a picture collection.

In the second science lesson, the discussion is focussed upon unusual land formations. Compositions on erosion are read before the group. The meaning of the term, "pothole" is illustrated by showing of a portion of a sound film. The pupils then discuss the formation of rocks, rivers, falls, canyons. They decide to make a canyon.

In the third lesson the first part of the film is re-run as a silent picture to review the concepts already learned. The work of rivers is then introduced through a film. The dust storms currently sweeping through parts of our country are cited. With reference to the expression, "meandering streams," the class is asked to write a composition, and if possible, illustrate it.

The last lesson on "Work of Running Water" is devoted to a special consideration of Niagara Falls. The ways in which the rocks under the Falls are worn away provides concrete illustration of the work of running water. The class is then asked to complete its booklet on the unit.

Whittinghill, W. W. (Department of Visual Education, Detroit, Michigan) "General Science Film Program in the Detroit Intermediate Schools." *Educational Screen.* 5:205-6. April 1926.

After an examination of the twenty science units listed in the course of study in General Science, a list of sixty reels of motion pictures was recommended. These films were then adapted and graded to the development of the pupils in seventh, eighth, and ninth grades of the intermediate school. A synopsis of the film is placed in the hands of each teacher and suggestions made for correlating each film with the units of work.

The value of the motion picture in developing *written and oral expression* is so well established that writers take this for granted and pass on to other values. Most teachers

reporting their use of films mention, in connection with the gains made by a film-aided lesson, that oral and written composition were improved. But few articles have been found that relate to the exclusive use of motion pictures for language work.

Otto has given the details of a unit on the development of the lamp, in which a motion picture was used to introduce a unit and lantern slides made by the children were used to illustrate the knowledge acquired during the study. The frame in which the film was used is clearly presented in this article.

A few articles by teachers in schools for deaf children, and by two teachers of abnormal children reveal the distinctive contribution of the motion picture in developing fluency of expression with such children.

Safety education, although not treated as a separate subject-matter field in most courses of study, may be the topic for a unit in English, as pointed out by Lee, in which a motion picture motivated the making of slides. The intensive safety campaign now going on in the New York State schools is greatly enriched by the use of various types of visual aids. Stack describes the types of materials used, how they are selected, and how they are presented.

Otto, Elsie I. (Grade 4, School 9, Buffalo, N.Y.) "Motivation of English through Films, Slides and Pictures." *Educational Screen.* 14:39-41. February 1935.

The topic of the unit which was developed in this fourth grade class was, "The Development of the Lamp." A motion picture entitled, *Light of a Race,* was used as an introduction. A study of vocabulary preceded the film showing. Discussion followed it. The children were encouraged to talk freely about the different ways in which artificial lighting is created, and their talk followed the order of development. The reference books on the reading table were used to study intensively each type of lamp. A collection of mounted pictures was used to

illustrate individual reports by the pupils. The class developed an outline, guided by the teacher. Oral and written stories followed. Home-made slides were prepared to accompany these stories. Fifteen of the best drawings were selected to be made into slides. The teacher found the children unusually apt in making slides and large colored illustrations.

"Language Teaching by Cinema." *Popular Educator.* 41:143. November 1923 (Quoted from the London Times)

An administrator in the national deaf and dumb institute in Paris undertook to cooperate with a film producer in making films to answer his needs. He wrote scenarios based on the 7,000 most commonly used words which deaf and dumb children would be apt to need in lip-reading. The sentences spoken in the dramatizations were short and appropriate to the scene. The teacher, after each scene, is expected to stop the projector, and by the illumination from a small lamp, repeat the sentence.

These films were found helpful for language work in the mother tongue, as well as for students of other countries studying French.

Beauchamp, James B. (Kentucky School for the Deaf) "Language from Moving Pictures." *Volta Review.* 33: 123-4. March 1931.

Carefully selected educational films are found to be most helpful for language work in this school. Each Friday morning at 8 o'clock, the pupils from second grade up assemble in Chapel to see two or three reels of pictures. After the showing the pupils return to their classrooms, and follow-up begins. Although the films treat of historical, geographical, scientific or other material, their content is used mainly for language work.

Composition work, grammar, and other types of language work were found to be aided through the use of films. Some classes do more follow-up work than others in the way of defining terms, explaining objects or processes, and the like. Some teachers plan their geography work to concur with films correlating with their work. Smaller children are given drill in speech reading after the showing. The teacher asks questions based on the film, the answers are spoken and then written into notebooks.

An example is given of the way in which a film was used to teach time clauses in grammar. From the film, *Our Daily*

Bread, children were asked to finish incomplete and elliptical sentences as follows:

As soon as the wheat was ripe ————————.
Before the wheat was ground ————————.
———— ———— ———— before the reaper was invented.
———— ———— ———— while the men were threshing the wheat.

The people used a flail to thresh the grain (before, after) the thresher was invented.

Prudhommeau, M. "Utlizing the Cinema for Teaching Abnormal Children." *International Review of Educational Cinematography.* 6:747-61. November 1934.

These recommendations are based on experiences with children in a government school for the improvement of abnormal children. The school comprised all types of mental deficients. One of the first observations to be made is that the collective reactions of abnormal children who are full of interest are the same as those produced on normal children under the same conditions.

Some observations from the use of the cinema:

1. The abnormal child's faculties of understanding and perception are very limited. The teacher must take care to avoid errors which might be unimportant for normal children, but against which such children would have no proper defense. The teacher must, then, be sure that the children are in a state to understand as far as it is possible, what they will see on the screen. The teacher should use the film as a tool, and the children should be made to realize that films can be a source of error. The success or failure of a lesson aided by a film depends to a large extent upon the amount of preparation on the part of the teacher.

2. Should showings be in the classroom or in special halls? Either is desirable, although one or the other is preferable at times.

3. Should the film be shown before or after the lesson? Although the opportunity is not always afforded for preparation where a film is shown outside the classroom, it is usually desirable for the teacher to prepare the children for what they are going

to see. The film showing may be continuous or interrupted by comment. Everything depends upon the nature of the film, the result aimed at, and the reactions of the children.

A teacher of "improvement" classes is fortunate in having no other object than education. He has not to bother about examinations and their results. This gives him plenty of latitude in the choice of his means of teaching and the subjects to be dealt with.

Teachers' manuals cannot take the place of a preview of the film itself by the teacher. Such manuals should not tell how the teacher should prepare the class, or what questions to ask. It ought to contain for the benefit of the teacher, an analysis of the film, with particulars of its various parts and the explanations for a proper undersanding of certain passages.

4. Silent or sound films? Although the sound film has a special attraction for children and exercises a profounder psychological influence than the silent picture on many pupils, some silent films exercise such a great attraction on these abnormal children that sound is unnecessary. The interest which leads a child to follow the action from beginning to end is so powerful that it can be transferred from the film itself to the person who presents the film. This strengthens the contention that it is not the film which teaches, but the teacher. With respect to talking films, the remarks of the teacher are preferable to the mechanical commentator. Even films where natural sound is used are disappointing, since the sounds are dubbed and music is usually inserted to fill in an interval.

5. Fixed or moving projection? Fixed projection should be employed in cases where no movement is necessary. Slides do not contrast with motion pictures; indeed they supplement them.

Parnes, Jean (Burnet School, Newark, N.J.) "The Use of Visual Aids for the Subnormal Child." *Educational Screen.* 10:76-7. March 1931.

Motion pictures, exhibits, slides, and specimens from the Newark Department of Visual Education were very helpful in guiding desirable social attitudes, fostering self-confidence, and developing fluency of expression among subnormal children.

Lee, Ettie (Mt. Vernon Junior High School) "Highway Safety." *Los Angeles School Journal.* 14:16-19. June 27, 1931.

As the result of a serious accident which befell a student of the school, the safety activity was stimulated. The showing of the Yale film, *Daniel Boone,* served to carry this interest still further, because Boone was depicted as a safe adventurer, one who took every precaution to protect himself and his companions from unnecessary exposure and danger.

The children planned an "all-singing, all-talking, all-color" production to bring to the foreground their attitudes on safety. Among the activities which this production involved were: making maps to scale, constructing bridges to illustrate education, engineering, and enforcement in safety, knowledge of safety laws, science, biography, arts, language, playwriting, editing, typing, and other subjects.

Stack, Herbert J. (Director, Education Division, National Bureau of Casualty and Surety Underwriters) "Teaching Safety through Visual Education." *Educational Screen.* 15: 82-4. March 1936.

The program of safety education in the New York City schools has been enriched by the introduction of a great variety of visual aids which are presented by special WPA teachers. These teachers visit the classrooms of a number of schools and, with the aid of motion pictures, slides, and posters they tend to develop habits of precaution among the children.

The use of slides involves a definite teaching technique. Slides should be accompanied by pupil participation. Each set is accompanied by a manuscript, which contains stories to be related or read to the children. In some cases pupils are called on to relate or read the story, or this opportunity is given after the visual lesson.

When using motion pictures, the teacher is provided with a synopsis. After some preparation, the film is shown, check tests given, and classroom discussion provided. This technique involves three steps in the educational process: a felt problem, the consideration of the problem in the film, checking knowledge acquired, and coming to conclusions through the check test or through the discussion. Copies of the check tests for each film are available to other teachers who desire them.

Certain cautions are offered to the safety teachers when using visual materials:

1. Pupil participation through discussion results in greater learning than a lecture furnished only by a teacher.

2. Slides should be used seasonally, stressing the kind of safety most important during the current month.

3. Films should be used in classrooms rather than with large groups in the assembly hall. Teachers should be provided with facilities for previewing, and manuals as well as check tests and questions for discussion.

III. Teaching With the Motion Picture and Other Visual Aids in the Junior and Senior High Schools

A consideration of the trends in using motion pictures and other visual aids in secondary education must recognize two conditions which prevail in most situations: first, that secondary education is departmentalized and teachers are subject-matter specialists in their respective fields; and secondly, that this departmentalization has tended to segregate the work of each class to the extent that an indication of teaching with visual aids in one subject in a given high school is no evidence that this trend applies to other departments of the school, or to similar departments in the school system.

One of the advantages of having a subject-matter specialist in the secondary school is that such a person makes an effort to be kept informed of developments in his field, and when convinced of the value of using supplementary teaching materials, is alert to the importance of initiating a visual education program. Teachers of science, including the natural and physical sciences, have, according to the available articles, used the motion picture in most systematic fashion. The reason for this is apparently that science has always been taught by the laboratory method and the motion picture,

lantern slide, or filmslide are substitutes for an actual demonstration in the laboratory. The funds for laboratory equipment in science departments usually make provision for the purchase and maintenance of projection equipment, and science teachers, having acquired a facility for manipulating mechanical apparatus, are less likely to be apprehensive of a motion picture projector than would other teachers.

The next subject matter field in popularity is that of geography and the social studies on the secondary level. Teachers of commercial subjects, vocational and industrial classes, secondary English classes, and foreign language classes are increasingly becoming interested in using these materials. However, there is no way of knowing to what extent these articles actually represent school practice. They are only what has appeared in print.

The articles which were reviewed for this section represent an improvement over those of the preceding one, in that teachers have been more specific in supplying the information which their teacher-readers need. The objectives to be served by visual aids, the sources of materials, their value and practicability have been indicated more often by secondary teachers, as the following pages will illustrate.

The articles by Rosenblum, Skimin, Hotchkiss, and Lynch are particularly noteworthy.[7]

The reports indicate that in general, secondary teachers are more aware than are elementary teachers of materials already in existence, and when they find such materials wanting, they are increasingly resorting to the production of new materials which will have recurring use. The practice among elementary school teachers is to make the construction of materials a culminating class activity for a unit of work, whereas the high school teacher will use such materials as a teaching aid or source of information. The articles by

[7] Pages 189, 187, 191, 219.

Rosenblum, Williams, Skimin, and Gramet [8] indicate such practice.

Secondary school teachers use motion pictures and other visual aids to serve the following purposes:

1. As background for a unit
2. To stimulate interest or develop an appreciation
3. As actual teaching aid, or direct source of information
4. To sensitize students to social problems
5. As aids to pupil activity
6. As review of a unit
7. For testing

This section has been classified by subjects. Where an author made mention of other subjects of the curriculum, these have been cross-referenced in the index.

An interesting survey was made a few years ago by Bard of the extent to which secondary school teachers of Ohio received and used projection equipment and materials. His findings with respect to teaching techniques are here summarized because the trends may be applied to other school situations in a similar way.

Bard, C. L. "A Study of the Administration of Projector Apparatus in the Secondary Schools of Ohio." Chapter VI. Unpublished M.A. thesis. Ohio State University. Columbus. 1931.

A detailed questionnaire submitted to a number of secondary schools in Ohio revealed the following information regarding techniques of use:

Many high schools permit pupils to operate their projectors. Some prefer to hire an outside operator. Such money could be more efficiently used for purchasing and renting materials, and high school pupils trained to operate the projectors.

Kinds of films shown: Of the 215 high schools reporting, 99 stated that they showed general educational films. Specific educational films were shown by 79 schools, 58 reported that they showed films for entertainment, and 22 reported that they showed films to develop an appreciation for good pictures.

[8] Part Four, page 295.

To whom the films are shown: Of the high schools answering, 34 reported that they always show pictures to the whole school at once. In 77 instances it was reported that both methods of showing to the whole school at once and to special classes were used. Film showings for homogeneous groups were always used in 30 schools, and sometimes in 48 schools. Thirty-three schools show films at Parent-Teacher meetings.

When films are shown: Fifty-two of the schools use motion pictures at a definite period each week. Forty-two present films according to a schedule that meets class needs. Forty high schools report showing motion pictures sporadically, 36 show films only in the evening before the public, and 5 show them to pupils at noon. Many schools reported using films for special classes, such as agriculture, biology, chemistry, commercial subjects, English, and the like.

Number of minutes per week devoted to motion pictures: In 17 of the schools reporting, films are shown fifteen minutes per week. Thirty minutes per week were allotted in 42 schools, and forty-five minutes in 14 schools. Six high schools reported that they devote more than 150 minutes per week to motion pictures. These latter, incidentally, were all city high schools.

Preparation for film showings: Twenty-four high schools reported that teachers preview the films before showing them. Lesson plans (when available) are used by 45 schools, occasionally by 40 schools, only when urged by 8 schools, and never by 25 schools.

Preparation of pupils for film showings: Many schools did not answer this question, but some of those reporting do not require special preparation for film showings. Some form of preparation, ranging from fifteen minutes to sixty minutes was required in 68 per cent of the cases.

Methods of explanation before a picture is shown: A large per cent of the high schools give the pupils a general explanation of the film before showing. Many lecture during the showing. This method is satisfactory only when the projector can be stopped while the teacher takes time to explain certain points of especial interest. Many of the schools use textbook correlation. Other methods used were: general explanation before showing, merely pointing out the main points, and in some cases, no explanation at all.

Discussion after a picture is shown: Nine schools did not discuss a picture in class after it was shown. Discussion for about fifteen minutes was permitted in 53 schools, for thirty minutes in 25 cases, for forty-five minutes in 13 schools, and for sixty minutes in 3 schools. The majority of the high schools require some discussion of the films after they are shown.

The extent to which motion picture information is included in final examinations or final grades: The majority of the schools indicated that they did not base any of their final examinations or final grades upon the pictures shown. About one-third of them base from 10 to 20 per cent of the final examination or final grade upon the pictures shown. These results indicate one of two things, either most of the persons filling out this questionnaire did not understand that the use of motion pictures is a teaching procedure and should be regarded as such, or the use of films is still a comparatively young practice, and is as yet but little understood by the persons administering them.

The article by Katz presents the aspects of *art education* which may be treated through motion pictures. The author has also given existing motion picture titles to be used in achieving the objectives of art education. Since the publication of this article, several additional films have been produced and indications are that more will be developed as art educators become aware of the potentiality of the motion picture.

Katz, Elias (Graduate student, Teachers College, Columbia University, N.Y.) "Educational Possibilities of Motion Picture Films in Art Courses." *Educational Screen.* 13:97. April 1934.

There are many aspects of art education which suitable motion pictures can enrich:

1. The teaching of the history of art, for which a few films have already been made, namely:

Temples and Tombs of Ancient Egypt (Metropolitan Museum of Art), a travel film showing important existing monuments.

The Hidden Talisman (Museum of Art), a historical film showing medieval life.
The Pottery Maker (Museum of Art), a masterpiece of art showing the American art of the 1860's.
Ten Commandments, King of Kings, M. Beaucaire, and other theatrical productions.

2. The teaching of the appreciation of art, exemplified by such films:

Twenty-Four Dollar Island, a travel film by Robert Flaherty showing magnificent views of N.Y.C. Contains fine arrangement of line, mass, and tone in architecture. (Pathe)
The Spectre, a historical film showing costumes and architecture of Colonial times. (Museum of Art)
Etcher's Art, a biographical film of Frank Benson and others.
Glass Blowing, with Specimens of Ancient and Medieval Glass, a process film giving a critical appreciation of glass ware.
The Gorges of the Giants, a Fox Movietone of natural beauty, showing beautiful arrangements of moving line and tone.

3. The actual practice of art may be supplemented by such films as:

Models in Motion (Eastman), in which drawing is stimulated.

Animated lines or scenic effects may be demonstrated through films. In design and composition, abstract purposive films of natural beauty could here also be used. Films give a clearer insight into technical processes when simply demonstrated, and will indirectly aid in manipulation.

The use of films for teaching certain skills in drawing has already been illustrated. Two teachers of *typewriting* and *stenography* have realized the possibility of using an original motion picture to illustrate proper technique for teaching the skills of their respective subjects. The articles by Skimin and Wood, furthermore, place the motion picture in its framework to fit the course in beginning typing and stenography.

Rosenblum studied the findings of a survey on "Visual Aids in Business Education" and proceeded to make a unique contribution to his field by developing a series of filmslide lessons on certain topics in *accountancy.* These are used as drill materials. Two articles describing his work are summarized here.

Skimin, Eleanor (Detroit, Michigan) "Motivating the Writing of Shorthand through the Use of Motion Pictures." *Eastern Commercial Teachers Association Yearbook.* 6:232. 1933.

A motion picture, *Correct Shorthand Technique,* was developed by the writer at Washington State College.

The broad objectives to be served by the film: There is a necessity for developing correct habits of writing in shorthand. The steps in the learning process as outlined by Morrison are: setting the model, imitation, criticism, and drill. On the part of the learner they are: getting an idea of what is to be done, trying to do it, finding out whether the effort is successful or not, and drill, drill, drill. The motion picture is used to set the model.

Specific objectives to be served by the film: This film is in keeping with the philosophy that dictation should begin early in the shorthand course, and that the program should blend writing, reading, and transcription from the outset. Early dictation, then, should give adequate attention to correct habits of writing, to guidance, and stimulation.

Description of the motion picture: The position of the body and arms in taking dictation is an important factor in the beginning stages of learning shorthand, as are correct hand movements, rhythm, and repetition. These are all clearly shown in the film.

Evaluation of the film in the light of these objectives: The film aids in developing from the outset correct habits of writing. The pupil is getting dictation down at the beginning at 60 to 80 words per minute with the greatest ease and skill, yet the mention of speed has been given little consideration. His mind can be directed later to what is being written, but at the beginning he is intent upon how. The student is brought into the proper

attitude toward his work, and transcription of his notes on the typewriter can and should begin from the first days of learning.

Skimin, Eleanor (Northern High School, Detroit) and **Wood, Ethel** (State College of Washington, Pullman) "Motion Pictures: A Device in the Teaching of Typewriting." *Educational Screen.* 13:265. December 1934.

The motion picture, *Teaching Beginners How to Typewrite,* illustrates the fundamental typewriter operations, such as correct stroking, correct use of the shift key, proper carriage return, rhythm, inserting and removing paper, use of tabulator key, and so on. The picture also illustrates definitely that increased speed comes from increased finger action when writing habits are correctly established during the early learning periods.

This teaching device will increase the effectiveness of instruction over the oral class analysis of finger exercises letter by letter. The film facilitates the learning process, prevents and eliminates tendencies to incorrect learning, and controls the physiological and psychological conditions under which the pupil must learn.

Rosenblum, Irving (Franklin K. Lane High School, Brooklyn, N.Y.) "An Accounting Lesson on a Roll of Film." *High Points.* 19, no. 5:60-4. May 1937.

This article is a report upon the progress made by two teachers in the preparation of home-made films and slides for use as lessons in accounting and related subjects. Two completed units were exhibited before the Association of Accounting Chairmen by C. A. Gramet, first assistant in biology, and the writer—co-authors of the accounting lessons.

How the problem originated: The findings of a survey published in the *Journal of Business Education* in 1933 reporting available "Visual Aids in Business Education," revealed that:

1. There were no films prepared for instruction in accounting.
2. There were many that might be suitable for use in business training classes.
3. The films were produced by business firms, chiefly for advertising purposes. Exception is noted in favor of the stenography and typing films by Skimin and Wood.[9]

[9] See articles above.

4. Development of a film library, based on existing materials, might be begun.

5. Commercial subjects offer a fertile field for application of visual devices.

The question is asked, "If a film is needed for use as a lesson, should it not be prepared with some regard for the recognized principles of pedagogy?"

What has been done:

1. An opaque projector is being used to correct homework in bookkeeping, eliminating waste of time in ruling forms on the blackboard. More time is thereby permitted for remedial lessons.

2. Plans have been made for a series of films for use in business training classes. These plans are consistent with the courses of study in that field in the schools of New Jersey, New York State, Idaho, Virginia, and in the cities of Lansing, St. Louis, Denver, Philadelphia, and New York. Among the subjects already prepared for photographing are lessons on: Purchases Routine, Preparation of the Payroll, Shipping by Rail, Filing, and Business Papers. These lessons have been planned so that they may be applied to business arithmetic, bookkeeping, and business law.

3. Certain topics in bookkeeping have been developed on film, such as: Interpretation of Financial Statements, Source of Bookkeeping Record, Closing Entries, and the Merchandise Cycle.

4. Lantern slides on law and two rolls of filmslide on accountancy were presented as an illustration of the technique employed.

What is to be done: A committee of commercial teachers should be organized to investigate the possibilities of visual education. Teachers should also be secured who would be willing to make experimental use of these materials. And a film library should be inaugurated at once as the starting point for a more extensive program.

Rosenblum, Irving (Franklin K. Lane High School, N.Y.) "Film Slide Lessons in Accounting." *Educational Screen.* 14:232. October 1935.

With the cooperation of another teacher experienced in photography, a series of film slides was produced to assist in

teaching the unit, "Closing the Ledger" in elementary and advanced accounting. They were prepared to fill a definite need on the part of a busy teacher for some condensed and permanent form of the various types of entries required in bookkeeping. The topic requires so many blackboard illustrations that it is seldom reviewed by teachers, but merely passed over with a casual remark. The film slide was used in preference to glass slides because a definite sequence was desired, and for its compactness and permanence. Although the cost is greater, the results justify it.

The filmslide lesson shows clearly that the entire accounting procedure is merely a technical manner of recording and reporting the elementary problem solved mathematically at the beginning of the lesson. A multiple approach, through arithmetic, through a statement of profit and loss, and through the ledger insures an understanding of the closing records. Three times in the course of the film lesson, opportunities are provided for a summary of the knowledge gained. The Sales Income account permits a review of the trading section of the Profit and Loss Statement, and the arithmetical computation of gross profit from figures of sale and cost. The Profit and Loss account affords a similar opportunity for discovering the relationship between "overhead" expenses and the operating section in the Profit and Loss Statement. A chart at the end summarizes the sequence of the transfer entries.

A second filmslide lesson has been prepared for advanced classes in accountancy.

The *social science* area on the secondary level presents many possibilities for the profitable use of films. The experiences of Hotchkiss in a Chicago school, where films were used as an integral part of a unit in American History, should prove unusually valuable to other teachers. The reader is referred to the original article for more adequate description than can be furnished by an abstract.

The article by Sharpe reveals the many types of interests which can be developed and encouraged through an efficient social studies laboratory in a school using the activity program of instruction.

Rothfuss, Halsey, Thralls, Olsen, and Williams have given fine evidence of the integrated use of all visual aids for developing their respective units. Rothfuss applied his materials to a unit on Abraham Lincoln; Halsey used visual aids for a unit on the insular possessions of the United States; Thralls was concerned with developing, with a class in commercial geography, proper insight into the coffee industry in its world relations; Olsen, as curator of a school museum in a commercial high school, indicates how the materials for classes in economic geography vary from actual specimens, models, charts, and similar realia to the projected picture in the form of slides, filmslides, or motion pictures showing the processes involved in manufacture. The unit on New England capes, developed by Williams, is well integrated, indicating that ample opportunity was afforded for pupil participation.

Brown provides a summary of the methods used by twenty teachers in junior high school history. Many of these suggestions will be of value to teachers interested in promoting pupil activity in connection with visual aids.

Hotchkiss, Grace (Hyde Park High School, Chicago) "The Use of the Motion Picture as a Technique of Instruction." *Social Studies.* 28:6-13. January 1937.

The use of the motion picture as a planned and regular technique of instruction in U.S. History II classes was the subject of an experiment conducted at Hyde Park High School during the spring semester, 1936.

Subject matter: The eight units of the second semester's work in American history were studied, and a list of films suitable for each unit compiled. At the close of the course, one motion picture was used as part of the review work. The films, with one exception, fall into two general classes, first those pictures which trace historically the development of some aspect of the unit; and those which illustrate the characteristics of the unit or of some aspect of the unit. The motion picture *Headlines of a Century* is in itself a review of the outstanding

features in the social, economic, and political life of the American nation for the last half century and was consequently used as review.

Instructional activities: The motion pictures for the unit were listed as part of the reference material on the mimeographed lesson sheet distributed to students. The special type of activity employed in the study of a picture was part of the preliminary instructions for the unit study. Some of the activities which related to films were: a series of questions especially planned to show the relationship of the picture information to the unit; a skeleton outline to be developed into an informational outline; a summary, emphasizing the outstanding features of the picture and showing how the study of the film aided in the understanding of the unit; a list of general principles to be proved by illustrative material from the film, organized together with other references into a chart; a series of events to be arranged in time order; and maps, charts or graphs based on information in the film.

Activities during the class hour in which the picture is shown can be managed in several ways. As a usual practice, the class watched a sound film through with no discussion unless some pupil asked for a second showing of a part of the film, or asked that the picture be stopped at a special scene for additional explanation.

Some of the techniques used with the silent film were: lecture by one pupil; lecture by the teacher; informal comments by the teacher; a committee report, with several pupils taking part; a lecture by an authority from within or outside the school; a question and answer recitation, in which the questions do not detract from the film.

Follow-up procedure: It is imperative that some class time immediately following the showing of the film be devoted to a discussion. Especially is this true for the first few pictures, in order to offset the impression that movies are intended for recreation. There was no assigned method of recitation for the follow-up period. Whatever the type of procedure used, it must serve to realize one aim, that of broadening the concept of the unit through the illustrative material provided in the film.

Testing: A brief class test, either new type or essay, is an excellent method to use in the follow-up recitation. It was

customary in this experiment to give a test at the completion of each unit. The film material had a definite place in this test. Knowledge gained from the study of a picture was found to be more effectively reviewed if the pupil expected to be responsible for using it.

Evaluation of results: The results of this experiment are difficult to separate in any scientific manner, since the number of pupils involved was small, and since the motion pictures were only one of several sources contributing to the mastery of the unit. One result, however, was the enjoyment of the pupils, bringing with it concentrated attention and interesting follow-up periods. Another result was the fact that a larger proportion of the class succeeded in answering those questions on the unit test which were based on the film than those based on the readings. An average of 85 per cent answered correctly questions based on class discussion, and an average of 91 per cent gave correct answers to questions based on the films. It was not possible to judge results as accurately for those questions which were based on a variety of experiences.

Provision for individual differences: The superior students prepared lectures to be given to explain the silent film, or served as chairmen of committees making group reports. Students who did not have the ability to make sustained reports for an entire film gave very creditable talks in connection with committee reports.

New avenues of interest opened up by the movies were investigated by the abler students who volunteered additional reports. One girl followed up a picture on women in industry by correspondence with the Women's Bureau, which resulted in an illustrated report on "The Present Status of Women in Industry." A boy made a tour of CCC camps in the immediate vicinity to supplement the film on CCC camps. Two pupils, interested in the personnel of the TVA, carried on a correspondence with the president of Antioch College, who is also in charge of the Tennessee Valley Authority, with the consequence that these pupils entered Antioch College after graduating from the high school.

Children of meager opportunity and slow intellect were especially aided by the films in learning the details of mass production, the influence of labor saving machinery, the preci-

sion of modern manufacturing, the evolution of the airplane, and other such technicalities of modern industry.

Socializing experiences: Very beneficial social experiences arise from the motion picture program. Through the film the classroom is broadened into a new, vivid world of which each pupil becomes a part. The motion picture as a form of recreation can be considered, the cultural appreciation of art and music can be broadened. A film on American Art, for example, served to introduce the foundation of understanding of modern American painting. Pictures on the World War and peace were the focal points for a discussion of the individual's duty in aiding in the preservation of peace. The TVA film, the one on soil erosion campaigns, and the one treating the fight against disease served to widen the pupil's knowledge of the social responsibilities of American citizens. Contact with the occupational world was built up through films to establish a background of experience. The evolution of the oil industry, the activities of the U.S. Department of Agriculture, and the stock market developed an understanding of occupations and the nature of the work of the world, as well as the social and economic significances of various aspects of the occupational world.

Opportunities for group work were many. Group reports given in the classroom to accompany a film showing, a committee in charge of returning films to the distributor, a committee which ordered the films and called for them, a committee working on a time schedule for showing the films, for reserving the machine and operators, a committee of superior students to help in selecting the films for the course, a committee to arrange for previewing—these made provision for participation by every member of the class. The committees worked during the class hour, as well as before and after school.

Mechanics of the film program: The school owned a 16mm. sound projector, a 16mm. silent machine, and a portable screen. Student operators were trained by one of the science teachers and a schedule worked out for them by which they did not lose class time in operating the machines. The science teacher took care of all the mechanical details involved in the film program.

Financing the film program: Of the 35 films used in the experiment, twenty-seven were loaned free of charge, the only expense being cost of transportation. One rental film was paid

for by the family of a pupil. The entire cost of the program was $27, of which $15 was expended for one film. The school had a small general fund for rentals and postage. The class members were asked to contribute five cents each toward rental fees, if they so wished. Many pupils offered more with the remark that admission to commercial movies cost much more. Sometimes two or three teachers working in the same field arranged their class programs to use the same picture, and contributed toward the payment. In this manner rental, postage, and a small surplus were realized on each rental film. The most expensive film was *Headlines of a Century,* which was used by all teachers of American and Modern History. In all, there were 64 reels of film borrowed during the semester. The average cost was slightly over 40 cents per reel for five hundred pupils.

Details of management:

1. Two reels of film are best for a 40-minute class period, if time for setting up and removing machines, and for discussion is to be provided.

2. Films can be shown effectively in an average classroom with ordinary window shades drawn.

3. The classroom is the best place to use for showing films. Grouping of several classes renders the group spirit, a social rather than an intellectual occasion. The teacher finds the development of a proper audience attitude the main concern of the period, rather than the enrichment of pupils' experiences in the interpretation of a history unit.

4. Sound films are better in a large auditorium; silent films, however, are as effective as sound. The latter require more careful follow-up discussion, since the comment of the speaker are not strictly in keeping with the classroom work. The school is beginning to assemble films which will have a constant educational value. Films for use in social sciences, however, are either free or are too prohibitive in price to be purchased.

5. A teacher cannot efficiently present a motion picture to a class unless he is familiar with it.

6. Until a teacher has experimented with motion pictures over a period of time, the only way he can arrange a program is by use of the trial and error method. Titles and advertising matter do not always give sufficient background for the film

7. A list of motion pictures should be planned when the course is planned. They should be as important in the course as any other reference materials, and should be reserved well in advance.

In planning the film program for this experiment, the teacher and the student committee canvassed the exhaustive film catalogs put out by commercial companies. In the same manner the catalogues of agencies handling free films were checked. A tentative program was laid out. Pupils wrote to the producers for additional explanatory information on the pictures chosen. In the light of these findings, a final list was made out. Free films were reserved at once. When it seemed impossible to get a rental film from any free source, and when no free one was found to substitute it, the rental film was reserved.

Conclusions: The increased interest in class work, the keen enjoyment of the film recitation, and the really excellent work of many pupils seem to justify the film program in this subject, United States History. One pupil made this parting observation, "It's great to have learned to use a movie like you use a book."

Tables appended to the article:

I. Alphabetical index of motion pictures, with addresses of distributors.
II. Relationship of the motion pictures to the units of instruction.
III. Films classified on a basis of treatment of subject matter
  A. Films which are historical in development of subject
  B. Films which are descriptive of present day conditions.

Sharpe, Florence (Belmont High School, Los Angeles) "The Social Studies Laboratory." *Los Angeles School Journal.* 14:7-10. June 27, 1931.

The social science laboratory developed at the Belmont High School has taken on the practical character which has heretofore been attributed only to the field of the exact sciences.

The laboratory began as a projection room for films and slides. The projection machines were kept running four days a week, nine periods a day, with from two to three reels of film running each period. The films had been previewed by the teachers before showing.

A World War Museum was then placed in the room and circulated throughout the various departments. Stillfilms, slides,

stereographs, wall charts, pictures, graphs, blackboard drawings, relics, maps, and plans were added to the collection. Gradually this room became so popular that another room had to be annexed. Here at long laboratory tables students in economic geography worked out problems by doing. They used a sand table, plastic clay, soap, etc., and invited guest speakers from industrial organizations. One outcome of this laboratory was an interest in books as a means of acquiring necessary and highly desired knowledge.

It was concluded by the teacher that a visual education program may be handled more easily under an activity curriculum than would be possible under any other system.

Rothfuss, Howard (Thomas A. Edison School, Cleveland, Ohio) "Visual Education Project on the Life of Abraham Lincoln." *Educational Screen.* 10:8-10. January 1931.

The steps in the development, and some related activities are:

1. Lantern slides depicting the public and private life of Abraham Lincoln were shown and discussed by the teacher while the pupils listened attentively. They were not permitted to ask questions during the first lesson. The slides were shown again the next period, with questions by the teacher and then by the pupils. The period of discussion worked up interest and a desire for more materials.

2. The boys formulated questions based on the slides and sought the answers in reference books. The students decided to build an exhibit of articles from the different periods of Lincoln's life, including a log cabin, books he read when a boy, the ax he used and rails he split, the store and post-office where he was known as 'Honest Abe', his first law book, and the like.

3. English, history, art, and shop teachers were called in to cooperate in the project.

4. A study sheet was prepared by the auditorium teacher and used following the lesson with slides. It contained quotations from Lincoln's speeches, which the class memorized. A few sketches from his life were dramatized.

5. The boys were responsible for preparing reports on the articles to be used in the exhibit.

6. A final test to measure achievement was administered.

7. The motion picture, *Land of Opportunity,* was shown to illustrate Lincoln's keen wit.

Some of the understandings which resulted from this project were:

(a) An interesting study of Lincoln's life.
(b) Places he lived, located on the map.
(c) Type of conditions, and the effect of environment on Lincoln's life.
(d) The real character of Lincoln, as illustrated by his dealings with others, and by his speeches.
(e) The duties of the President, his worries and cares, his enemies, political courtesies, office seekers, and finally the Civil War.
(f) Integration of English, art, and shop work with history.

Halsey, James H. (Instructor in Geography, High School, Hammond, Indiana) "An Experiment in Geography Teaching." *Educational Screen.* 15:137-40. May 1936.

This unit was prepared in the form of a small experiment to determine whether the use of visual aids in the conventional classroom would help the students acquire more knowledge; and secondly, to determine whether the use of visual aids with a modified teaching technique and class plan would be better than using visual aids in the conventional class plan.

The conventional class plan is defined as that using daily assignments, class recitation and discussion, and supervised class study. The modified teaching technique eliminated homework assignments and used the informal-lecture discussion method.

Three classes of pupils about fifteen years of age were used. The Control Group numbered 29 pupils. They were taught the unit on "Insular Possessions of the U.S." in the conventional classroom manner without the use of films or slides. Experimental Group I, numbering 29 pupils, were given similar instruction, except that films and slides were shown. Experimental Group II, numbering 22 pupils, were taught by the modified teaching procedure, using motion pictures and slides.

A comparison of the general ability of the three groups with respect to their median intelligence scores, median scores on a standard test in United States geography, and median scores on a pretest of the insular possessions of the United States revealed that the Control Group had the highest general ability, Experimental Group I the second highest, and Experimental

Group II the lowest general ability. The objective test given before and after the experiment was of the multiple choice type, being almost all factual instead of thought-provoking, as it was believed the former was a truer test of the information and knowledge acquired.

The results of the experiment, as indicated by the scores on the end-test, are in exactly opposite order to the results that might be expected from the general abilities of the three groups. Experimental Group II, having the modified teaching technique with visual aids, made the highest scores. Experimental Group I, having visual aids and the conventional teaching methods, with textbook, made the second highest scores. The Control Group, having seen no films or slides, made the lowest scores.

Conclusions:

In addition to the increase in knowledge and information which resulted, there were other advantages, such as new interests and attitudes, none of which could be measured. The thoughtful questions asked by the students in the two experimental groups, as well as their genuine interest and enthusiasm during class, are somewhat indicative of these advantages. Whether these groups will retain more than the control group will be measured by a retention test.

The evidence definitely shows that visual aids are an advantage in teaching. However, in order to achieve the best results with visual aids, the ordinary teaching methods and classroom management need to be modified.

The plan used with Experimental Group II was to lecture at the beginning of the class on the subject for that day. Then the films and slides were projected and the various scenes carefully explained and elaborated. While the pictures were being shown, many questions were asked and very often spirited discussions occurred. Always at these moments the slides were left projected and the films stopped or run over. If any time remained after the pictures were shown, some of the more difficult matters were again discussed.

Thralls, Zoe A. (Assistant Professor of Geography, Univ. of Pittsburgh) "The Use of Visual Materials in Commercial Geography." *Eastern Commercial Teachers Association Yearbook.* 8:78-83. 1935.

Pupils must have an adequate basis for thinking geographically. The use of visual materials in commercial geography is

an essential means for developing accurate concepts. These materials must be properly organized and planned. In the first place, the visual aid must be the type best suited to develop the concept needed; secondly, it must be an integral part of the instructional unit; and lastly, it must be used under appropriate guidance.

A unit in commercial geography dealing with the "Coffee Industry in Its World Relations," was introduced through pictographs, bar graphs, and maps. Five topics were assigned, with problems involving reasoning and comparisons under each.

The fundamental principles in selecting and using visual aids which a teacher should consider are:

1. The type of material used in a specific situation should be the one that presents the desired information most effectively and economically.
2. The teacher must know the specific, distinctive function of each type and how to fit it into the instructional unit.
3. Pupil must be given something definite to find when using the material, and the information he is asked to find must be needed at that time.
4. Pupil must be trained to check information gained from one source against that secured from another.

Olsen, Estelle (Curator, Commercial Museum, High School of Commerce, New York City) "The Use of Visual Materials in the High School of Commerce." *Eastern Commercial Teachers Association Yearbook.* 6:208-13. 1933.

The Commercial Museum, located in the basement of the High School of Commerce since 1928, caters particularly to the needs of students and teachers of economic geography. It includes a visual instruction room, equipped with 35mm. silent projector, a stereopticon, an opaque lantern, globes, blackboards, and the like; a study section, with cases, table displays, chairs and desks; and a store room and preparation room with vertical files, cabinets, and other materials.

Students report to the Museum on alternate weeks. The course in economic geography, which requires a year for completion, is divided into two parts, first the Economic Geography of the United States, and second, the Economic Geography of Foreign Countries. On the even weeks students see films which correlate directly with the subject studied in the classroom. The films deal with processes in the manufacture of raw materials.

The motion picture has been judged as the best medium for illustrating these processes, and for showing the scenery, life, agriculture, and industries of the countries studied.

An example of the way in which visual aids are correlated with the course of study is evidenced by the following unit on "Non-Ferreous Metals."

On an assigned period of the week, the pupils report to the study section of the Commercial Museum. There they find prepared for them samples of non-ferreous metals, such as sheet zinc, galvanized steel sheet, steel sheet coated with zinc, and so on. Each student is provided with a work sheet to acquaint himself with some qualities of these materials. They test the elasticity of heat; they compare weight of aluminum, tin, copper, and lead; they compare the color of each, discuss uses, and other aspects. Their notebook report, due after this laboratory period, is amplified by material secured from texts and reference books. Displays are secured from the large manufacturing concerns through the supply office, or through the resourcefulness of the curator.

The following week the students report with their parallel class to the visual instruction section of the Museum. Here they are shown two reels of the film, *From Mine to Consumer,* on copper, and one reel on the method of obtaining sulphur by the Frasch process. The teacher draws the attention of the students to important features during the showing and while the reels are being changed, the students make brief notations in their notebooks to be used in the recitation period that follows.

The curator is constantly on the alert for new sources of material, and displays are changed frequently.

Teachers of classes in domestic and foreign trade, chemistry, English, journalism, art, and geography all make use of the Museum. Students often apply to the Museum for help in preparing illustrated talks.

Williams, Paul T. (Instructor in Social Studies, High School, Ballston Spa, N.Y.) "A Visit to the New England Capes: A Unit of Study in Economic Geography." *Educational Screen.* 15:142-3, 173-5. May, June 1936.

The teacher selected this unit, "A Visit to the New England Capes" because the New England coast, the ocean, the fishing, the boats, the people have always been interesting to people of

all ages. Interest in the unit was aroused by the showing of two carefully selected slides made from photographs which the teacher had taken during a visit to that region. A relief map of the region under discussion was the other type of visual aid used in the introduction. The outcome of this lesson was the development of an outline containing the phases of life in the New England capes in which the students were interested.

It was planned that the information would be developed by individual pupils, working in small groups, and presented to the class through illustrated reports. A bibliography, suggested by the teacher, gave the student assistance with respect to reference books, sources of information, and sources of illustrative materials.

The student reports were adequately supplemented by maps, slides, pictures, original sketches, and exhibits. The members of the class made and brought in hand-made slides on a fishing schooner, a sand dune, and a quarry. The class arranged an excursion to the Automobile Club of Saratoga Springs and Schnectady. They wrote to the Chambers of Commerce of the towns which they were studying, and received circulars and exhibits for further study. One of the important outcomes of this unit was interest in reading about this section of the country. The making of slides and amateur photography took on a new meaning for the pupils, many of them developing these as hobbies.

To summarize the unit, the teacher presented two short films on the New England Fisheries. These films presented the problems faced by fishermen, the hardships they endure under severe weather, the methods of catching cod and mackerel, and the process of preparing fish for market.

Some conclusions made by the teacher on the use of visual aids are:

1. The scarcity of suitable material was formerly a handicap. Now textbook illustrations are well selected to represent accuracy and typical situations, and other visual aids which approach reality more closely are more easily obtained than heretofore.

2. The teacher should have in mind the social setting of the unit and develop the details only in connection with the background. The span of attention of the pupil is short. Each

topic must be made vital to him and a real need for studying it shown. Simplicity of instruction and understanding for subject matter should be aimed at throughout the unit of work. The immediate reaction of the pupil to a new problem is vitally important.

3. In every case the problem should be presented with an interesting approach, often in story form followed by the showing of one or two pictures. The slides or pictures should be selected very carefully as to subject matter and only a few should be used at a time. The illustrative material should be designed to provoke questions rather than answer them. The motion picture has a definite part in the summary of this unit, in that it brings together the detached parts into a single unit so that the pupil gets a mental grasp of the whole.

Brown, Harriet McCure (University of Southern California) "Teaching Aids and Activities for Junior High School History." *Historical Outlook.* 21:384-6. December 1930.

Some of the methods by which twenty teachers use films, pictures, slides, stillfilms, realia, maps and the like in junior high school history instruction may be summarized as follows:

Still pictures are used for making pictorial notebooks as individual or class projects, on bulletin boards, for a permanent picture file, to introduce a new topic, to help understand a difficult subject, to illustrate oral reports, as foundation for oral reports, as basis for written compositions, textbook illustrations for observation, comprehension, and comparison, as a game, to acquire information, for atmosphere, and for lectures.

Motion pictures are used to introduce a new unit, as part of regular classroom instruction, to stimulate observation, to develop written expression, for appreciation, for review, and for quizzing.

Lantern slides are used to illustrate pupil reports, teacher reports, to develop observation, and for review.

Still films are used like slides.

Source materials of history are used as visual aids. Pupils contribute relics, start a permanent museum, have a discovery day at local historical spots, visit museums, and prepare reports.

Other visual aids which may be used are the blackboard, charts, diagrams, and time lines.

Among the activities of history classes which were reported were map making, slide making, dramatizations, writing activities stimulated by films, drawing activities including the cartoon, construction activities, activities in reading stimulated by films or slides.

The reports below are of especial interest to the teacher of *English.* Lewin, in two articles, has correlated the use of educational films with work in English. The theatrical motion picture suggests many possibilities for developing units in English classes. The course of study by Sterner and Bowden offers specific guidance along this line.[10] The lesson plan which has been so admirably developed by Newton was concerned with the ways in which a current novel, *Arrowsmith,* and possibly its motion picture transcription, can assist in developing socially beneficial attitudes and ideals among students of English. Other concomitant outcomes are also described in this article. Similar projects might be undertaken with more recent motion picture adaptations of literary classics.

Lewin, William (Newark, N.J.) "Photoplays for Vocational Guidance." *Educational Screen.* 6:452-4. December 1927.

In a ninth-grade class the composition work was centered about a series of one-reel films for a period of three months. The pupils studied every film from occupational angles. Their object was to gain vocational information and to point out the requirements, the advantages, and the disadvantages of many occupations. Some of the pictures were not very good, but generally they were valuable in showing men and women at work, often in interesting settings.

The experiment demonstrated forcefully that a one-reel picture requiring fifteen minutes for projection, and allowing fifteen minutes for preparation, and fifteen minutes for immediate reaction greatly enhanced the interest of the children in their composition work. The problem of the children was

[10] Appendix.

no longer to go home and ponder how to fill up a page of composition paper on the topic assigned, but rather how to say in a fifteen minute theme all they would like to say on the subject.

At the end of the term they all agreed that the one-reel picture told them more in fifteen minutes in a dramatic way, than anything they could have heard or read on the subject in the same space of time.

Lewin, William. "The Use of Films and Other Visual Aids in the Teaching of Composition." *Educational Screen.* 10: 276-7. November 1931.

A well-organized lesson plan built around a fifteen-minute motion picture reel should begin with a private preview of the film for the purpose of making an outline. Before it is shown to the class, it is well for the teacher to have an outline on the board. While the film is being shown, the sub-titles should be read aloud by selected pupils or by the class in unison. Significant points should be emphasized by the teacher while observation is going on.

After the showing of the film, the outline on the board may be examined again briefly and erased. The class should then reconstruct the outline from memory and discuss each point rapidly. If the picture has been worth while, it will provoke discussion, perhaps argumentation. If interest runs high, an impromptu debate can be arranged. Affirmation and rebuttal lead to real thinking. Topics for written themes, as suggested by the reactions of the pupils, may now be written on the board. The film has served to motivate the assignment.

Newton, Muriel B. (Abraham Lincoln High School, New York City) "An Experiment with Arrowsmith." *High Points.* 18, no. 9:62-7. November 1936.

The following project was based on the novel, *Arrowsmith,* by Sinclair Lewis. Several students had seen the motion picture.

1. The book was read out of class for enjoyment.

2. Discussion of the character Arrowsmith, and the qualities he might have inherited. One quality, curiosity, led to much discussion revealing that curiosity alone had no value, but when coupled with initiative, perseverance, and determination it would lead people to interesting pursuits.

3. Question by the teacher, "If you had Arrowsmith's desire to find the why of each problem, in what type of research would you be most interested?" Topics suggested were directly and indirectly concerned with the book, for example, plagues, hero worship, microscopy, Sinclair Lewis, printing, hobbies, and so on.

4. How to obtain information on these topics? The librarian came to the next class meeting armed with samples of materials for research. Pupils were then asked to compile a bibliography on index cards on their selected topic. They went further than this and visited laboratories, interviewed specialists, and wrote letters of inquiry.

5. In the meantime, the novel, *Arrowsmith,* was discussed in class with respect to curiosity, hero worship, ambition, small town life vs. city life, a doctor's responsibility to his people, the scientific aspect of the story, the women in the story, the purpose of the story. The last topic led to a detailed discussion of books written with a purpose, or for propaganda. A class dramatization of an episode in the book, and a debate on socialized medicine were two of the outcomes of the class discussions.

6. The bibliographies of each individual student were organized, essays written by each student, each theme typed, illustrated and bound, and added to the class library.

If the motion picture is to be used for those areas of knowledge which treat of abstractions, the field of *mathematics* holds great possibilities for such use. However, the extent of use of visual aids in mathematics has been limited to lantern slides containing diagramatic illustrations or generalizations. The potentialities of animation with a moving picture, or trick photography, have not yet received adequate attention by producers of educational films. One reference here included is the only one which treats of the value of a motion picture for teaching geometry. Schlauch offers a review of the talking picture, *The Play of the Imagination in Geometry,* which Dr. David Eugene Smith made in cooperation with the Erpi Picture Consultants, Inc. The author points out that this medium has expressed, as no

other can, the meaning of geometrical terms and figures. An examination of published articles, however, reveals no account of the way in which a classroom teacher has made use of this film.

Schlauch, W. S. "The Play of the Imagination in Geometry: An Educational Talking Picture by David Eugene Smith, in collaboration with A. Bakst." *Mathematics Teacher.* 24: 55-6. January 1931.

The value of the motion picture for *modern language* instruction appears to consist chiefly in providing a setting for students of the country or countries where the language is used. The motion picture can also depict the human geography of a foreign country and promote desirable international understandings. Talking pictures offer, in addition, an illustration of pronunciation and idioms. Teachers of French will find the articles by Bernard and Ginsburg very helpful. Paine describes the use he made of filmslides and films to develop fluency of expression in Spanish.

Bernard, Edward G. (Assistant Managing Editor) "Silent Films and Lantern Slides in Teaching French." *Modern Language Journal.* 21:109-15. November 1936.

A successful technique for using films in French classes is to show the film first, discuss its contents thoroughly, then repeat the film showing to clarify and solidify the ideas. The class should be prepared for film lessons by preliminary study. It is absolutely essential for a teacher to preview films and slides before presenting them to the class, regardless of the type of teacher's manual which accompanies the material. Any commentary by the teacher during the showing of the film should be terse and as pithy as possible. Avoid a running lecture for the full duration of the motion picture.

For pupils of lower intelligence or lower school-grades, the teacher should make provision for an advance study of difficult words in the sub-titles. There should be short, repeated showings of films.

Lantern slides should be presented to suit the level of the learners and to fit the unit of work under consideration. The teacher should feel free to revise the order of slide sets, and to revise the prepared lectures. A maximum of fifteen slides, if that many, should be allotted to one class period.

Visual material should be regarded as starting points for further activity, and students should be encouraged to follow up lines of inquiry about France suggested by the pictures, or to make collections of realia, or to write reports.

Ginsburg, Edward B. "Foreign Talking Pictures in Modern Language Instruction." *Modern Language Journal.* 19: 433-8. March 1935.

In using a foreign language film with a secondary school class one showing was not found sufficient to influence knowledge of idiomatic phrases or vocabulary. Several showings did result in improvement in pronunciation through an improved understanding of the rhythm of speech in the particular foreign language.

Some foreign language films which would be valuable for students would be films on phonetics, using close-up and slow motion photography; or travel films which present true conditions under which average people in other countries live. Available travel films tend to show the unusual conditions of a people.

Talking pictures offer a combination of the image, the spoken word, and the printed word.

Paine, Donald A. (Lakewood High School, Ohio) "Pictures in the Spanish Class." *Visual Review.* 1930:12-14.

It has already been pointed out that teachers of *science* use visual aids more systematically and more frequently than do teachers of other subjects. In this section, some of the teachers have reported specific techniques for using visual aids in the various science areas.

Horn places the motion picture in its proper relationship to the whole field of science. Shriner, in connection with his use of films for junior high school science, has developed an ingenious system of pupil evaluation of motion pictures. Walters used a motion picture to introduce each of the units

in his chemistry course. He, too, has indicated how his selection of pictures was influenced by his pupils' judgments regarding each film and its place in the unit. Shriner has illustrated how he extended his science instruction to actual life situations, thus affording some vocational guidance.

The visual aids program described by Lewis is in conformity with the unit method established by Morrison. After presenting the sequence of steps, the author evaluates each type of visual aid in terms of the values to be derived. Osburn has presented the background for his use of visual aids in a general science class operating under the contract system, an arrangement similar to the one described by Lewis. The Koenig lesson plan shows how visual aids were effectively correlated with classes studying under the unit system of instruction, using contracts as were described in the two preceding articles.

Astell has demonstrated very clearly the rôle of the motion picture in integrating the study of copper as applied to industry. A series of films were used as background for individual reports, and pupils were encouraged to illustrate their reports with slides. The original article should be consulted for information concerning texts, periodicals, and films used.

The article by Lynch indicates the line of thought pursued by this teacher of biology in developing the concept of energy. First she outlines the steps, then the important generalizations expected to be derived in each step, and the motion pictures which she found helpful in achieving her objectives. The reader is referred to the original article.

Certain teachers have indicated special uses which were made of the motion picture in science instruction. Limited laboratory facilities were overcome by using films, as evidenced by the Bing and Jones articles. The former used films to illustrate microscopy, and also, with a class of girls

living in a crowded section of New York City, to illustrate the need for hygienic ways of living. Jones found the motion picture helpful in a crowded classroom in a North Carolina school where laboratory equipment was inadequate.

Wheat found the showing of motion pictures for review to be a most popular and effective medium among high school students studying for the State Regents' Examinations. The use of films and other visual aids in a physics class is illustrated in the article by Brown.

Horn, Aaron. "The Function of the Picture in Science Instruction." *Educational Screen.* 9:75. March 1930.

The organization of the course in science from the elementary grades through high school must be based on the psychological sequence: environmental experience, experimental derivation of physical law, and application of these laws to previous and further environmental experience. In the first and third steps the picture occupies a position of unique and fundamental importance, serving a purpose completely distinct from that of the experiment.

Classroom demonstrations should be supplemented by a film showing processes in their natural situations.

Shriner, J. T. (Latimer Junior High School, Pittsburgh) "The Use of Motion Pictures in the Teaching of Junior High School Science." *Educational Screen.* 5:325-8. June 1926.

The judgment of trained students is a strong influence upon the pictures selected for use in science classes. Reviewing is done by an extra-curricular club. The groups are divided into the "onceovers," the "spotters," and the final group, consisting of teachers. The first group are asked to answer the following questions:

Do you like this reel?
What do you like about it?
Would you like to see it in class?
Under what subject?
What did you learn that you did not already know?
Would you like to see it again?

The second group of pupils, about six in number, record the answers to the following questions:

What percentage of the picture is sub-titles? still pictures?
Why do you think this would be a good motion picture for class?
What objection have you to it for class use?
What subject would it supplement?
What makes you think so?
Is it simple enough for class use and why?
How many days would you take to show it and why?

The accepted films are then reviewed by teachers in the subject in which the films were assigned. Tests are worked out on the basis of the contents of the film. These are true-false tests, completion, multiple choice, and review.

When using a film for class instruction, it is desirable to arouse the pupil's curiosity, hold his interest, and guide his observations in working out life situations. Show only one reel or part of it in a recitation period.

The use of the film on the gasoline engine served to develop interest in a life situation. The students were desirous of learning what traits were needed to be a successful automobile mechanic, a vocation which they had seen represented in the film. Interviews with automobile workers were arranged, including an interview with a manager, a superintendent, a shop foreman, the best mechanic, the poorest mechanic, an office man, an employment manager, and a technical engineer. The traits were ranked, then defined, and a composite picture made of the traits ranked according to the frequency of mention by the persons interviewed. Accuracy, technical knowledge, thoroughness, cleanliness, speed, ambition, interest in work were the traits in order.

Such an activity leads to desirable attitudes which the general public, the automobile mechanic, the employment manager, and the student will welcome.

Walters, Orville S. (Enid, Oklahoma High School) "Industrial Motion Pictures in the Classroom." *Journal of Chemical Education.* 6:1736-9. October 1929.

A series of films were scheduled in advance for use in a class in chemistry without having been previewed by the teacher.

Each was used to introduce the particular subject it described. The films used were:

a) *Beyond the Microscope*
b) *A Trip through Filmland*
c) *Study of Steel*
d) *Oxygen, the Wonder Worker*
e) *Jewels of Industry*
f) *Story of Dynamite*
g) *Story of Gasoline*

At the end of the course, a questionnaire was submitted to the students. The questions and some indication of the answers were as follows:

1. Which picture did you like best?
(a) 36 ; (b) 21 ; (c) 16 ; (g) 13%; (e) 7%; (d) 4%; (f) 3%.
2. From which picture did you learn most?
(g) 32%; (c) 21%; (b) 12%; (f) 12%; (e) 11%; (a) 7%; (d) 5%.
3. Which pictures enabled you to understand points which you did not otherwise understand clearly from the text and any class discussion?
4. Which pictures, if any, did not add to your understanding of the subject as taken up by the text and class discussion?
5. What processes do you feel would have been more clearly understood if pictures of them had been shown?
6. Would you rather spend an hour seeing a picture and discussing it, or working an hour in the laboratory?
24% preferred the laboratory, and 5% liked both equally well.
7. If you could do only one, would you rather take a trip through the refinery, or see the picture, *Story of Gasoline*? Why?
8. What criticisms would you make of the pictures which have been shown?
"Real chemistry of process not emphasized."
"Too many pictures of buildings and grounds."
"Too much complicated machinery shown."
9. Neglecting their entertainment value, do you believe motion pictures have been of actual benefit to you in understanding chemistry? Why?
74 of 75 said films had been of benefit.

Conclusions:

1. The most interesting pictures were not the ones from which students learned most. In fact, the least popular on this

basis stands next highest in clearing up points otherwise not clearly understood.

2. Apparently high instructional value is generally sacrificed for high entertainment value in an industrial film. No title is outstanding as both.

3. Some pictures appealed to a small minority on any basis.

4. A majority of the students profited by all the films. Some of the pictures benefitted all, or practically all students.

5. Fuller understanding of some processes would have resulted through the showing of one or more additional films.

6. A majority of students prefer motion pictures to the laboratory, but only because of less effort involved.

7. Some pictures are preferable to an excursion.

8. Because they are designed for the widest possible use, industrial motion pictures cannot include involved technical points. However, these are readily covered by subsequent class discussion.

9. The pupils and the teacher are favorably inclined toward using classroom films, especially in connection with "applied" portions of the course. They should, however, be used in moderation and chosen carefully.

Lewis, Donald K. (Science Instructor, Central High School, Red Wing, Minnesota) "Visual Aids in Science Teaching." *Educational Screen.* 14:67-71. March 1935.

The unit attack method described in this article was developed after ten years of experimentation with different visual aid teaching set-ups. The system, following the technique established by Dr. Henry C. Morrison, involves a critical analysis of the course of study at hand in the light of pupil needs. The subject matter finally selected is then carefully divided into a series of related units, and in each one a few outstanding facts are designated as the minimum essentials which must be mastered by the pupils as they advance from one unit to the next.

The actual unit investigation process follows a set routine of six steps presented as follows:

1. *Pre-test.* An objective type test definitely covering the minimum essentials introduces the unit.
2. *Study Outline Presentation.* Definite questions and study directions are written in outline on the board. After a detailed explanatory talk by the instructor, the

pupils copy the outline in their notebooks which helps to familiarize them with the requirements of the unit.

3. *Study Investigation.* Various teaching aids are made accessible in the classroom, e.g. supplementary texts, encyclopediae, filed clippings, mounted pictures, magazine articles, booklets, charts, maps, graphs, blackboard diagrams, models, specimens, samples, exhibits, experimental substances, stereographs, slides, 16mm. motion picture equipment, and field trips when possible.
4. *Organization and Checking of Information.* This is usually a paper in story or outline form, wherein the pupil rechecks and summarizes his findings as called for in the study outline. Appropriate explanatory diagrams are encouraged.
5. *End Test.* This includes a repetition of the pre-test, and additional questions covering material outside the minimum essentials. By comparing the pre-test with the repetition test scores, the amount of improvement can be determined; and by referring the repetition score to a worked-out scale, the percentage of minimum essentials mastered can be reached. The scores on the questions which test for additional information will determine the gains beyond the minimum essentials.
6. *Concluding Discussion.* This is a very informal discussion wherein final conclusions are considered, viewpoints aired, and particular problems examined.

The writer subscribes to this method because it provides a simple, definite plan for both teacher and pupil, and because it is built soundly upon the essential features of the scientific method of investigation.

Consideration is then given to the place of the school journey, the stereograph, the still picture, and the projected picture respectively in relation to such a program of instruction.

Osburn, Dorothy Frances (Westlake Junior High School, Oakland, California) "The Use of Visual Aids in Teaching General Science by the Contract Method." *California Quarterly of Secondary Education.* 7:14-18. October 1931.

The course in general science included units on the solar system, science in industry, and the contributions of science to the modern home. One or more types of visual aids were used in each unit, where each seemed best to fit. Before deciding

on the type of aid to use, the teacher listed all ten types, with suggestions for using each, as follows:

1. Exhibits, such as California minerals, bacteria gardens, types of leaves, collections of insects, telegraph instruments, and the like.
2. Models, such as models of the eye, the ear, and other organs, and models of motors, or steam engines.
3. Excursions, to an observatory, to the United Iron Works, to Lakeside Park, to Snow Museum, to the airport, and so on.
4. Prints, of magazine illustrations showing foods, machinery, people, clouds, birds, fish, flowers all kept on file.
5. Charts and diagrams, showing parts of flowers, structure, etc.
6. Maps and globes, for showing the physical aspects of winds, gravity, and facts of time and position.
7. Stereographs, to convey the idea of third dimension for individual instruction.
8. Slides, commercial ones to stimulate thought and convey information on almost any subject; and home-made ones for diagrams and testing.
9. Still films, used as slides.
10. Motion pictures, to show processes of manufacture, habits of animals in their natural environment, and the like, where the concept of motion is essential. Good as introduction or review of a unit.

Under the contract system prevailing in the school, each topic is allotted two weeks for completion. Mimeographed outlines are given to the students. During the first fifteen or twenty minutes of each daily hour period, group instruction, experimentation, or open forum discussions are carried on. The remainder of the period is usually devoted to individual work.

Koenig, C. J. (Scarborough School, Scarborough-on-Hudson, N.Y.) "Visual Aids in Teaching Science Units." *Educational Screen.* 13:110-12. April 1934.

This secondary school uses the Morrison plan of unit teaching. A lesson plan is here described for teaching "Germination and Growth of Plants," wherein the motion picture is used for introducing the unit and as a direct source of information, and specimens and slides are used, together with reference materials in developing the unit.

A mimeographed sheet of instructions is given to the student. Following is a sample unit:

Presentation: The main purpose of the unit on Germination and Growth of Plants is to show how a baby plant, or embryo, grows into an adult. Seeds, as we learned in a previous unit, are formed in fruits, as the result of the pollination of flowers. Seeds may, for long periods of time, remain dormant, then suddenly show signs of life. This activity is due to a stimulus of some kind. Obviously conditions both inside and outside the seed start the growth of the plant. We are, then, interested in finding out just what these conditions that start and maintain growth are. By experimentation, we shall find the answer to this problem. Then, too, plants must obtain food in order to grow. The fact that seeds do contain food materials of various sorts is evident when we think that we eat such seeds as peas and beans. We shall then make a comparison of the manner in which foods are used by plants with the way in which we use the same substances.

Assimilative Material: Among the problems to be solved in this unit are the following:

A. Where are baby plants found?
   1. Study of seeds
      (a) Actual study of bean and corn seeds
      (b) Lantern slides of various seeds (See Keystone slides)

B. How can we find what nutrients are present in seeds?
   1. Test for starch
      (a) Study of crushed bean seed stained with iodine under the microscope
      (b) Study of colored chart of starch test.
   2. Test for proteins
      (a) Use of paper with grease spot in projector to show it is translucent. Use Langworthy Food Charts, 6, 10, 13, 14 showing by visual means percentage of nutrients in various seeds.
      (b) Test carried out by each student.

C. What factors are necessary for germination?
   1. Water
      Demonstration showing failure of dry seeds to grow in dry moss, and successful growth of soaked seeds in moist moss.

2. Air
   Demonstration showing failure of seeds to grow in a vacuum, and successful growth of seed in container open to air.
3. Temperature
   Demonstration showing failure of seeds to grow when kept in warm oven or in refrigerator and successful growth when kept at room temperature.

D. How does the embryo become a plant?
   1. Cotyledon; 2. Plumule; 3. Hypocotyl
      (a) Observation and study of actual bean and corn seedlings at various stages of growth in a germinating box
      (b) Study of preserved specimen showing progressive stages of growth of seedlings
      (c) Detailed study of the motion picture, *Do You Know Beans?* (Edited Pictures System), showing animated drawings and progressive shots of bean growth
      (d) Study of lantern slide showing structure of seed parts in various seeds (Keystone slides)
      (e) Study in microscope of the various sections of corn seed
      (f) Experiments on effect on growth of removing the cotyledon.

E. What makes a young plant grow?
   1. Proof that oxidation occurs in plants
      (a) Experiment, using lime-water test for carbon
      (b) Demonstration, expelling air from lungs through lime water to show presence of carbon dioxide in human breath.

F. Do plants digest food?
   1. Proof that starch is changed to sugar in plants
      (a) Experiments and demonstrations.

Organization: You will organize the unit material by constructing a summary outline of the unit's work. The charts and slides are always accessible to the students and in review of the unit may be used to supplement or replace re-reading of the text material.

Check-Up: At the completion of the unit a check-up will be given to determine your mastery of the unit. (Many of the

slides and charts used in the study are made by the students themselves during the assimilative period. This serves the students as a combination of visual and manual expression, and also to build up a permanent library which is of use to other students.)

Astell, Louis A. "An Integrated Project on Copper, Utilizing Visual Aids in Various Forms." *Educational Screen.* 11:21-5. January 1932.

A class in chemistry was studying the integration between the chemistry of copper and its application to industry. The work of the unit was divided into fourteen topics, each of which could be developed through motion pictures and texts. The students or the teacher were assigned to prepare reports on one of the following:

1. Many Uses of Copper
2. Life in the Copper Mining Districts of the U.S.
3. General Relationship of Copper and Coal Mining
4. History of Copper
5. Geological Aspects of Copper
   - (a) Copper Mining
   - (b) Copper Production in the U.S.
   - (c) Copper Production beyond the U.S.
   - (d) Properties of Copper
6. Milling
   - (a) Milling, including acid leaching
   - (b) Milling, including ammonia regeneration
   - (c) Froth Flotation in the Copper Industry
7. Smelting of Copper
8. Refining of Copper and of Copper Wire
9. Industrial, and Other Aspects
   - (a) Copper Markets
   - (b) Copper and Electricity
   - (c) Copper in Mintage
   - (d) Copper in Building Construction
   - (e) Copper in Plumbing Industry
   - (f) Copper in Automobiles
   - (g) Copper in the Telephone
   - (h) Copper in Medicine and Health
   - (i) Copper in National Defense
   - (j) Copper in Literature
10. Electroplating Flowers, Insects, etc.
11. Copper in Chemistry Textbooks in High School
12. Lipowitz's Alloy

The report was to be supplemented by scrap books, and possibly by a field trip to a copper or brass fabrication plant. Lantern slides were found helpful in illustrating pupil reports.

Several motion pictures were found which illustrated precisely the topic under consideration. Following are some of these, and their sources:

1. *Story of Copper,* 10 reels.
   Produced by Rothacker Film Corporation, Chicago.
   Distributed by U.S. Bureau of Mines.
2. *Story of Fabrication of Copper,* 2 reels.
   Produced and distributed by U.S. Bureau of Mines.
   Use only when a field trip is not practicable.
3. *Copper Mining and Smelting,* 1 reel, and *Refining and Manufacture of Copper,* 2 reels.
   Distributed by Y.M.C.A. Motion Picture Bureau.
4. *From Mine to Consumer,* 1 reel.
   Produced by Anaconda Copper Co.
   Distributed by American Museum of Natural History, N.Y.C.

Lynch, Mary Elizabeth (Dorchester High School for Girls, Boston) "Classroom Films as an Aid in Teaching the Energy Concept." *Classroom Film.* November 1936. Eastman Teaching Films, Inc. Rochester, N.Y.

Several of the Eastman Teaching Films were incorporated into the biology course in which the concept of energy was to be developed. With beginning students, the first step was to develop, through observation and experience, a general understanding of the differences between living and lifeless matter. The question is asked, "What enables these living things to perform the functions common to them?" The answer is developed from the pupils, that energy in some form is necessary.

The next problem is to study this energy, or power to do work, permitting the observation of phenomena in the outside world. The sources of energy are reduced to the following: sun, wind, water, electricity, coal, wood, oil, and food. To demonstrate these sources in the laboratory, the hand lens is used, by which the heat of the sun can be concentrated to ignite paper, a model windmill, a small waterwheel, an electric motor, and a steam boiler. Through discussion, the sources of energy are condensed to sun, wind, water, and vegetation. The instructor suggests that all of these may derive their energy from a

common source, but because of limitation of background and experience, further discussion is usually fruitless.

The film, *Energy from Sunlight,* is now used. The pupils are interested to see on the screen the experiment which they have performed with the hand lens, and its larger application to the solar engine is easily grasped. The relation of the sun's energy to that of falling water and wind is well understood after seeing the film. Next, pupils are assigned to demonstrate, by laboratory experiment, the facts which they have learned. The rest of the film is shown without much comment, because the work of the next several weeks will elaborate the knowledge of the relation of sunlight to food energy.

Another problem which arises is, "How is this solar energy converted to the use of living things?" A discussion period reveals vegetation as the basic food source. Further study shows that all of this vegetation possesses a green substance called chlorophyll. By a series of experiments and laboratory demonstrations with living plants, it is seen that in the presence of sunlight this chlorophyll enables the plant to synthesize carbon dioxide and water to make carbohydrates. The problem is summarized by showing the film, *The Green Plant,* in its entirety. The showing of the film is accompanied and followed by discussion, which links up the data contained in it with the knowledge gained from the classroom experiments.

After developing the problem, "What forms may food derived from vegetation take?", the class proceeds to the question, "How does the body convert food to its use?" By dissection, the class studies the structure of the digestive systems of various animals. Details of structure are seen with the aid of the microscope and microprojector. Experiments are made to show the action of saliva, gastric juice, and pancreatic juice. The film, *Digestion,* is of the greatest value in solving this problem. It is more efficient than any other method for teaching the mechanics of swallowing, the muscular action of the stomach, and peristalsis. It broadens the view already gained of the structure of the alimentary canal, and prepares the class for the coming problem, "How is digested food made available to all parts of the body?"

To introduce this new problem, the end of the film on digestion is repeated. This leads naturally to the study of the structure of the circulatory system. The flow of blood in the

capillaries of the frog's web is seen under the microscope. The pulsing of the chick-embryo heart is seen, first in the living embryo, and then by means of the film, *Circulation.* This film shows details essential to an understanding of the functions of the heart, arteries, capillaries, and veins. Further study by dissection of the sheep's heart, and microscopic study of arteries and veins prepares for the showing of the part of the film devoted to the human heart. The sequence of heart movements is very well shown, and the differences between pulmonary and systemic circulation are made clear. The diagrams which show the interchange of gases, foods, and wastes between the blood and tissues are more valuable than any amount of talking about it can be.

After a period devoted to the summarization of the problem, the class is led to see that although the food has been digested and distributed to the cells of the body, the stored energy of the sun is not yet available to the body. The problem now is, "How is the energy stored in food released for the use of the body?" Laboratory demonstrations are made of the release of heat from wood, coal, oil, bread, corn, and powdered milk by burning. The class raises the question as to how a similar process may take place in the body, and decides that the oxygen taken during respiration must unite with the food to release the energy used by the body. To understand how the process takes place, the class dissected a sheep's trachea and lungs. Sections of tissues were studied from the microscope. To sum up this knowledge of anatomy, the first section of the film, *Breathing,* was shown. The rest of the film was shown later to illustrate the physiology of respiration. The section which shows the movement of the ribs and diaphragm at inhalation and exhalation is especially valuable.

The discussion next turns to the manner in which the body makes use of released energy. This leaves the problem, "How is the body energy released in the form of motion?" The types of motion are next studied, and all are seen to depend upon muscle. Then they use the microscope to study the structure. These facts are clinched through the first part of the film, *Muscles.* The properties of muscles are also learned by the film, later corroborated through experiments.

Finally, several days are devoted to integrating all of the information on energy, its storage and use. The film, *Energy*

from Sunlight, is shown again. This time its significance is much greater, because of the deeper knowledge brought to it by the students. They are ready now to go on to a general study of the life structures and functions of both plants and animals.

Bing, Mary E. (Corlears Junior High School, New York City) "What Size of Film Is Most Effective in Classroom Teaching?" *Nation's Schools.* 5:58-60. January 1930.

Biology is an unfamiliar subject to the parents of these students of New York's east side, and bewildering to the children. The use of motion pictures has greatly aided in lending an aspect of reality to the discussion of animals and natural phenomena of the out of doors which these children had never seen.

The use of microscopes for each of a class of thirty girls leaves little time for the application of the knowledge thus acquired. A picture, expertly conceived, designed and executed, served to bring to all the important facts which may be found under a microscope. The study of bacteria offers a good opportunity to discuss hygienic ways of living, such as the foods they eat, the water they drink, and the proper ventilation of their rooms.

Jones, H. D. (Knightdale, North Carolina) "Learning by Seeing, or Science by Sight." *North Carolina Teacher.* 1-12. September 1934.

A series of films used in connection with the study of bees, protozoa, transportation by water, and the study of light in the natural and physical sciences did much to solve the problem of overcrowded classrooms and insufficient laboratory equipment. Yet it is observed that the effectiveness of the motion picture applies equally to those situations where texts and laboratories are ample.

Wheat, Frank M. (Chairman of Biology, George Washington High School, New York City) "Voluntary Motion Picture Review Classes." *The Classroom Film.* March 1937. Eastman Teaching Films, Inc. Rochester, N.Y.

In New York City and State, at the end of the second year of biology, there is a required State Regents' Examination. All teachers are anxious to have pupils make good records on these

tests, and different methods have been devised for those who need extra coaching.

A program of motion picture films has been arranged at the George Washington High School, in which films are shown for thirty minutes after school three times weekly a few weeks preceding the examination date. Most of the students have seen the films at a former time, but in spite of this there was an average volunteer attendance each day of between 100 and 150. One teacher kept careful track of those in her class who took this voluntary review. Twenty of her pupils attended all six afternoons. All of these passed the regents' test.

One of the recent examinations revealed that of fifty short answer questions, seventeen could be answered by information obtained from the films shown in the review.

It was significant that so many voluntarily gave thirty minutes of their afternoon to see these films, when no credit of any kind was given for attendance.

The schedule of films includes the following:

Microscopic Animal Life
The Green Plant
Digestion
Breathing
The Blood
Circulation
Circulatory Control
Bacteria
Mold and Yeast
How Life Begins, reel 2
How Life Begins, reel 3
How Life Begins, reel 4

Raskin, Abraham (Inwood Junior High School, New York City) "Another Type of Motion Picture Lesson." *The Classroom Film.* March 1937.

Following is the technique found to be most practicable in a New York City school, using a one-reel motion picture with adequate provision for discussion.

1. A pupil is assigned to place on the blackboard a few thought-provoking questions. The pupils copy these into their notebooks while the teacher prepares the film for projection.
2. The film is shown, supplemented with as little talk as possible during the showing. The pupils jot down any points which they think need to be included in their answers to the assigned questions.
3. After projection, while the instructor is busy replacing the projector, the pupils review the answers to the questions.

4. Discussion on the questions follows in the ten or fifteen minutes which remain. Thus two or three well-selected questions will receive better consideration in a forty-minute period than would a series of 25 short answer questions.

Brown, H. E. (formerly of Ridgewood, N.J., now at Lincoln School, Teachers College, Columbia University, N.Y.) "Visual Materials in the Teaching of Physics." *Educational Screen.* 7:96-7. May 1928.

This article is based on the statement that if, as one educator asserted, "Every good educational film leaves an intense, inner desire on the part of the student to find out more about the subject," and if physics is going to grow in popularity on its own merits, motion pictures, slides, and film strips should by all means be used.

In presenting motion pictures before a class, occasional comment by the teacher is desirable. It was found that students observed important items better when they were pointed out by the teacher, than when they were left to pass without comment. It may be effective to stop the motion picture at times to point out pertinent details.

The subject of physics is particularly well shown in motion pictures which depict the applications of physics to every day life. There is no better medium for doing this.

The teaching of *vocational subjects* in secondary schools requires that instruction be as concrete as possible. Visual aids, then, would be a natural addition to the other items available to teachers and students. One technique for using motion pictures in a trade school has been described in an article by Taylor. The French educator, Fontègne, makes a good point of the sensitization which a student needs to decide upon his occupational ambitions. Motion pictures for vocational guidance, he contends, should contain more than a straightforward presentation of the conditions operating in each line of work. They should contain some aesthetic quality which would instill a love for that type of work, and even for work itself.

Taylor, Allyn C. (Vocational School, St. Paul, Minn.) "Motion Pictures as a Teaching Aid in a Trade School." *Industrial Arts Magazine.* 18:57-8. February 1929.

Students should have a definite purpose in seeing a picture, if they are to derive value from it. In order to bring about a maximum of effectiveness, the teacher must have previewed it and planned the quiz or list of questions which he will expect the students to answer following the showing.

In connection with the film, *Story of Heat Treatment of Steel* a list of thirty questions were given the students in advance. After the film showing, there followed a class discussion and an assignment to each student for a written report. Most of the films used were of the commercial, industrial type.

Fontègne, Julien. "The Use of the Cinema in Occupational Instruction." *International Review of Educational Cinematography.* 5:177-8. March 1933.

Films for occupational instruction should convey a feeling of "love for one's work," as depicted by the persons in the film. Bénoit-Levy's film, "Doigts d'Ouvrières" is given as an illustration of such a film. The theme of it is: "Workgirl's hands, fairy's hands . . . hands, instruments of the intelligence, creators of loveliness . . . . it is a dream come true . . . the poetry of work."

If labor has its poetry, it has also its joy. When we show on the screen a worker coming back to his home which is full of peace and comfort, are we not indirectly engaging in occupational instruction?

One type of film is the specialized instructional one. What it requires is not so much the details, as the way of making a suggestion to the child who has to place himself in life. What is wanted is that when a child has seen one of these films, he should cry out spontaneously, "That is the work I should like. That is the job for me, before all others."

The film should be shown in school and not accompanied with very much comment. We could almost go so far as to say that complete absence of comment is the best plan. The child has heard of different crafts and trades in his class; he has handled and worked with various materials which form the object of one of his possible future tasks. Nothing remains

but for him to make his choice. Let him alone in his amazement. Do not interrupt his admirations.

All occupational instruction should begin with the projection of a film of a general character, showing suitable occupations for boys and girls. After several trades have been shown to the child, and he has more or less limited his choice to one or two, then one may show him films dealing with the work in which he has displayed interest. Occupational films should be shown to the child's parents, too.

IV. Motion Pictures for Adult Education

The two articles which have been summarized in this section will indicate two very diverse areas of instruction in which the motion picture was found to be a valuable tool. It is probable that films are used in adult education to a much greater extent than this bibliography reveals, but that instructors have failed to report such use in published form.

Munyan describes the value of films for workers' education. The Tilton and Childs investigation was an effort to measure scientifically the value of the *Yale Chronicles of America Photoplays* to groups of adults in South Carolina. The growth in opportunities for adult elementary education now being provided by W.P.A. and C.C.C. classes should result in a much more extended use of films as a teaching aid.

Munyan, E. A. (Union Gas and Electric Company, Cincinnati) "Quicker Education by Means of Motion Picture Lectures." *Visual Review.* 1930:23-4.

Among the films shown to workers each week are *Digging Machinery and Its Uses,* one on *Air Compressing Machinery,* one on the *Story of Anaconda,* one on *Caterpillar Tractors,* the *Manufacture of Cast Iron Pipe,* and the *Acetylene Welding of Steel Pipe Lines.*

Intervals between reels are used for brief talks by the manager on the subject of better methods of doing work. These

meetings serve to educate employees at an exceptionally low per capita cost, and they also serve to improve employee relations and increase employee efficiency.

The employees find the films helpful because they learn how equipment can be used on other jobs, and how it is used in other industries.

Tilton, J. W. (Associate Professor of Educational Psychology, Yale University) and **Childs, Arney R.** (Principal, Logan School, Columbia, S.C.) "The Use of the Yale Photoplays in an Elementary School for Adults." *Educational Method.* 13:71-5. November 1933.

An experiment was conducted in 1931 in Clemson College with a class of adults who had not gone beyond the seventh grade. One group, the experimental group, consisted of students who were illiterate and equivalent in educational experience to Grades I to III. Another group, the intermediate group, consisted of students whose education was equivalent to Grades IV and V. The advanced group consisted of students whose test scores approximately equalled those of children in Grades VI and VII.

The *experimental group* ranged in age from 15 to 70, averaging 25. The ratio of men to women was about 2 to 1. In native ability they were probably below average. The ages of the *intermediate group* ranged from 14 to 45, the average being 20. The ratio of men to women was about 1.6 to 1. In native ability they were about average. In the *advanced group* the ages ranged from 15 to 34, the average being 20. The ratio of men to women was about 1.3 to 1. In ability the advanced group was average or better. In all three groups the occupation was most frequently mill work, many being released for the purpose of attending the Opportunity School and often financed in whole or part by their employers. During the four-week period of summer school, the students lived at the college.

The Yale Chronicles were shown five evenings weekly, from 9 to 10 P. M. in the auditorium. Little attempt was made to correlate the material in the films with regular history instruction, since the course of study dealt with History of South Carolina.

The procedure used during the showing was to have Mrs. Childs read the captions from the film for the benefit of those

who could not read. A few remarks were added by her. Three tests, made and administered by Mrs. Childs, were used to measure the results of the film showings. Each test consisted of 75 questions so worded that they might be answered by underlining, "Yes," "No," or "I don't know." The papers were scored by subtracting the number wrong from the number right. The tests were administered at the beginning and end of each week. The scores of the experimental group on the initial test at the beginning of the second week showed that they had very little knowledge of American History.

There appeared to be a greater difference between the experimental and intermediate groups than between the intermediate and advanced groups. A battery of tests to determine the public school placement of the students revealed the average initial scores at the beginning of the second week to be:

GRADE	AVERAGE INITIAL SCORE
1	4
2	4
3	4
4	14
5	21
6	23
7	25
8	26

From these figures it may be concluded that the second or third year of schooling added no perceptible ability to answer the test questions. The equivalent of the fourth year of schooling made the greatest contribution, the increase diminishing from that point on. In so far as the test measured the knowledge of history taught in the elementary schools previously attended by these adults, it drew most heavily upon that content taught in Grades IV and V.

The 75 items on the test used before and after the showing of *Gateway to the West, Wolfe and Montcalm, Eve of the Revolution, Declaration of Independence,* and *Yorktown* were analyzed to find out: (a) to what extent one had to see the pictures in order to learn the answers, or, to what extent the gains consisted of the core knowledge usually learned in the course of schooling; and (b) to what extent the gains of the three groups were made along similar lines.

From the initial testing data, the percentage for each item of the experimental group answering the question correctly was

computed. A similar percentage was then computed for the intermediate and advanced groups combined. The first percentage was then subtracted from the second as a measure, for each question, of the extent to which more schooling and intelligence provided the answer without an opportunity of viewing the pictures. Then for each item or question there was computed the percentage of the illiterate group which learned to answer it correctly during the week, and the same thing was done for the other groups. This gave for each item of information a measure, within each group, of the extent to which that item was taught during the week.

Results: The gains made as a result of the use of the pictures were not peculiar to the pictures, but were of the sort which normally come with more schooling. And this was most evident in the case of the least schooled and least evident in the case of the most advanced group.

Interpretation of findings: Cautions:

1. The elementary schools referred to are the schools which had been attended by such members of the adult group as had gone to school.
2. The illiterate adults learned all the history which is learned in those grades. The tests used were built closely around the history portrayed in the pictures.
3. To say that the illiterate adults' gain is made by children in the third and fourth grades is not to say that children in those grades learn all that the adults learned. The comparison holds only for what the test measured and for the kind of history instruction which the adults had previously received.
4. The experimental teaching situation had many limitations in that the films were shown at a late hour and students were tired from the day's schooling. Furthermore, experimental work with the Photoplays has shown that they are not a substitute for teaching. The results of this experiment are from a somewhat incidental use of the Photoplays, not a carefully prepared or recommended program.

Conclusions:

1. The initial scores and the gains made by the three groups were roughly in direct proportion to the amount of their schooling and of their ability. The gain made by the illiterate group consisted very largely in getting information which had already been acquired by the

better educated groups while attending school up to the middle of the fifth grade.

2. The Photoplays may be viewed with profit by any adult group on the elementary school level, supplying a basic core knowledge of American history to those who lack it, supplementing and enriching, in proportion to the amount of such basic knowledge already possessed.

V. Motion Pictures in Higher Education

The distinctive role of the motion picture and other visual aids in higher education is clearly stated by Freeman. One of his concluding statements is to the effect that a survey of the needs of college courses would indicate the desirability of extending the use of visual aids in institutions of higher learning. Haworth has made just such a survey at the Pasadena Junior College and the summary of his findings will indicate the status of the motion picture in relation to other visual aids used in the various departments of that school. Another article which treats of the value which the motion picture can render to a university curriculum is that of Hutchins in which he describes the extensive plan of the University of Chicago with respect to sound films. Allen's article describes the application of this plan to a survey course in physical science at Colgate University.

The abstracts which follow are concerned with the use of films in specific areas of instruction on the college or post-graduate level; Glover in business courses, Ulp in teaching of drawing, Price in the teaching of general zoology, Stover in the teaching of pedagogy, and Freeman in the teaching of psychology.

Freeman, Frank N. "Some Principles on the Use of Visual Methods in Higher Education." *Educational Screen.* 8: 100-1, 135-6. April, May 1929.

It should be remembered that visual education is limited in purpose to a presentation of concrete information, that the term

"concrete" is relative, and that the objectives of visual education differ in higher education from those in the elementary and secondary schools. In colleges the needs of the student are varied, each instructor employs a diversified technique, and the organization or administration of visual aids must be flexible.

An instructor in an institution of higher learning would have to plan somewhat as follows for the use of visual aids: What are the essential concrete experiences required for the understanding of the subject and each topic or phase of the subject? Which of these necessary forms of preliminary experience is the student likely to have had? (The solution of this problem is, of course, complicated by the diversity of experiences which students have had. Not only their every-day experience, but their education has differed enormously. Some have traveled widely, some not at all. In this case, try to strike a medium and, if necessary, provide too much rather than too little foundational experience.) What would be the best method of supplying the necessary experience? Which visual aid would help to achieve the objectives, as determined by the criteria of suitability, economy, ease of handling? Has the material been prepared and organized for college use?

An experimental study of the problems of various college courses would undoubtedly indicate the gaps which need to be filled, and would demonstrate the desirability of a considerable extension of visual education in higher institutions of learning.

Haworth, Harry A. (Pasadena Junior College) "A Survey of the Use of Visual Aids in Pasadena Junior College." *Educational Screen.* 11:105. April 1932.

A survey was conducted by the Visual Education Committee of the Pasadena Junior College to determine the extent of use made of visual aids, the needs of the teachers, those which can be met and those which cannot be met.

The survey was launched mainly because the criticism had been made that motion pictures were emphasized to the exclusion of other types of visual aids. The results show that if the criticism was once true, it no longer applies.

Each teacher was given a list of the various types of visual aids to instruction with space at the bottom for additions to the list, and was asked to indicate after each type the number of

times it was used per month, using the last month as a basis for estimate.

The absolute mathematical results of the study are questionable, but not the relative tendencies shown. As a result, the motion picture is a low ninth in a list of eleven aids used. The figures were rearranged on the basis of departments.

Tables show that maps were most used in the school, pictures and wall charts next, demonstrations, lantern slides, models, still films, field trips, motion pictures, microscopic projection, and opaque projection—all in order of usage. The departments using these aids were in order, House and Fine Arts, Biological Sciences, Commerce, Physical Science, English, Social Science, Language, and the following to a very small extent: Mathematics and Engineering, Music, Industrial Arts, with Physical Education not using any.

Of the 102 teachers answering the questionnaire, 51 per cent reported not using any visual aids.

Teachers' needs were incorporated into the report of the Committee and action on them planned.

Hutchins, Robert Maynard (President, Chicago University) "The New Tool." *American Scholar.* March 1933. p. 241-3.

The new educational plan for the University of Chicago proposes to offer general orientation courses for freshmen and sophomores, which will be used as the basis for intelligent specialization in the last two years of college. In order to achieve this purpose on a large scale with a minimum expenditure for laboratory equipment, a project for producing some 80 educational talking pictures in collaboration with Erpi Picture Consultants, Inc. was worked out.[11] This method is supposed to be best suited for laboratory instruction to large classes, in the physical, natural, and social sciences.

These films do not attempt to jazz up education, but to discover the best subjects to be treated in films. They do not replace the teacher. Without an instructor, the films are merely an interesting series of scientific experiments. With a competent teacher they become a potent educational instrument.

[11] For list of films already available, apply to University of Chicago Press, or Erpi Picture Consultants, Inc. N.Y.C.

Allen, John S. (Colgate University, Hamilton, N.Y.) "Films in the College Classroom." *Educational Screen.* 14:161. June 1935.

The Physical Science Survey course is designed to orient freshmen in the fields of astronomy, chemistry, geology, and physics. Through an introduction to these sciences, it aims to give a definite conception of the physical world, some appreciation of the scientific method and the part it has had in the intellectual life of the race, and the contribution of the physical sciences to the solution of some contemporary problems. It is a logically developed course in the physical sciences, rather than a "cut-down" version of the elementary courses in the departments represented.

One period a week the class meets as a whole in the auditorium, where sound films and illustrated lectures are found to be very valuable. The other periods during the week are given over to small group discussions, field trips, and individual research. The University of Chicago series of talking films, among others, are used.

Glover, J. G. (Dept. of Management, New York University) "Use of Motion Pictures in Business Courses." *Educational Screen.* 9:104-5. April 1930.

The course in Manufacturing Industry, of the Department of Management, School of Commerce, New York University, is an orientation course for the freshman who intends to make business his life's work. The purpose of the course is to acquaint the student with the important manufactories of the United States and to bring out the characteristics of the various industries. It gives a desirable cultural background, pictures the sociological surroundings of the worker, and broadens the student's viewpoint.

The class meets for two one-hour periods a week. Three reels are shown in forty minutes. In the remaining time there is either discussion, or a speaker from the industrial plant shown in the film, who may describe problems of management.

The textbook of the course is *Century of Industrial Progress* by Dr. F. W. Wile. A chapter is assigned each week, and the films are chosen to supplement the text. This combination affords the students an unexcelled opportunity to appreciate the

development of each industry, and the present day methods of mass production. Such a course should help the students in deciding the field of business which interests them most.

Ulp, Clifford McCormick. "Models in Motion: A Study of Materials and Procedure Best Adapted to Teach Dynamic Drawing." *Journal of Higher Education.* 4:19-22. January 1933.

A specially constructed film, *Models in Motion* was used as the basis for an investigation in the School of Applied Art of the Rochester Athenaeum and Mechanics Institute. Three types of students used the film:

(A) The entering freshman class who had never drawn from life.

(B) Beginning junior class who had limited experience in sketching from life.

(C) And the beginning senior class who had considerable experience in drawing from life, illustration, and sketch classes.

One section of the freshman class met for one hour twice a week, all the other classes met for one hour once a week. No control classes were used. The study was supervised and observed by the director of the school and carried on by five different instructors who were encouraged to introduce variations of the method without detracting from the main intent.

Conclusions, representing the judgment of the five instructors, of the director, and of eleven other instructors who had opportunity to observe the characteristics of students, work in related subjects, are

(A) A short, interrupted observation repeated in rapid sequence (which is the basic feature of models in motion) is stimulating to mental analysis and organization.

(B) The activity of the class is paced by the action of the motion picture.

(C) Attention is carried more naturally to the dynamic lines of the figure.

(D) Freshmen, who had had no previous training in drawing, grasped the purpose of motion picture drawing more quickly than senior students trained with posted models previous to the senior year.

(E) Drawing from memory (after seeing the film) or drawing directly from the motion picture were demonstrated to produce undoubted values in emphasizing the following fundamentals of drawing: keen observation is stimulated, the student tends to select a vital phase of the action, an appreciation of major relations is developed, importance of emphasis on details and of elimination of unnecessary detail grows upon the student, and the ability to make a dynamic drawing is increased.

(F) Sketching from models in motion helps greatly to interest students in memory drawing.

(G) In design classes, greater appreciation of rhythm and movement may be traced to work from models in motion.

(H) In figure-drawing classes, motion picture study helped to develop an understanding of the unity of the figure and its action.

(I) In painting classes, appreciation of major relations and a more rapid and more direct attack seemed to have been achieved.

Models in motion might well be an interesting and stimulating means of acquiring the "language of drawing" for elementary school pupils.

Price, John W. (Associate Professor of Zoology, Ohio State University, Columbus, Ohio) "The Use of Films in General Zoology Teaching." *Educational Screen.* 13:263-4. December 1934.

There are at least five definite situations in which films are used to advantage in presenting the material of General Zoology as it is now being taught:

1. Films used to present demonstrations of experiments before large classes. An experiment conducted with groups of as many as a hundred as compared with groups of 35 showed the great value of the enlarged image.

2. Films used to supplement other visual methods. Films used to supplement laboratory demonstrations and student experimentation will ensure comprehension, especially since the film shows exactly what the student is expected to see; standardization of material presented.

3. Films used to illustrate physiological processes of the human body. Manikins are lacking in life, and animals used

to demonstrate human physiological processes are indirect. Films using the human subject and animated drawings are most effective.

4. Films used to demonstrate life history.

5. Films showing animals in their natural habitats. This is second only to the actual experience.

Although the efficacy of the film was not measured in an experimental way, the film-taught groups of larger numbers made a somewhat higher score in an informational test than did the groups of smaller numbers.

Stover, Edgar M. (Research Associate, Erpi Picture Consultants, Inc.) "Talking Picture as an Aid in Adult Learning." *National Board of Review Magazine.* 9:11-13. November 1934.

This experiment was conducted during a summer session at Teachers College by Dr. Laura Krieger Eads and Mr. Stover. Four classes in educational psychology were used. The purpose of the experiment was to determine whether or not the talking picture as a teaching medium is superior to other means usually employed in the classroom—assigned readings, lectures and class discussions. A control group was used which did not see the picture, but followed the procedures of the experimental group in all other respects. Precautions were taken to see that these groups were equivalent with respect to mental ability (as measured by the Otis test) and previous knowledge of psychology.

A test on the Buswell procedures in diagnostic measurement in arithmetic was administered. This was based on the Buswell and Johns monograph, *Diagnostic Studies in Arithmetic.*

Talking Picture vs. Assigned Readings: Two groups of students had read the monograph as a required assignment, but they did not discuss it in class. One group saw the talking picture after reading the monograph. The mean score of that group was 11 points higher than that of the control group.

Talking Picture vs. Reading and Class Discussion: The experimental group which had seen the talking picture made a score which was, on the average, almost nine points higher than those made by the students who did not see it.

Talking Picture vs. Lecture: A class was divided into two groups, one of which saw the twenty-minute film while the

other listened to a lecture on the materials described in the picture which had been based on the scientific techniques discussed in the monograph. A stenographic report of the lecture showed that the instructor had covered all the techniques and had presented them clearly and forcefully. The group which saw the picture surpassed the control group by four points.

A questionnaire showed the students to be enthusiastic about the value of the film.

Freeman, G. L. (Professor at Northwestern University) "Visual Aids in Adult Education." *Educational Screen.* 16: 9-10. January 1937.

Reviewed in Part Four, p. 287.

VI. Large Group Instruction With Films

Although motion pictures for instruction have been found most effective when used with small groups under normal classroom conditions, some mention should be made of ways in which films have been used effectively before large groups. Articles describing this technique may be classified as those in which the auditorium showing of films was directly correlated with the curriculum, and those in which such showings were intended for recreation.

Stoddard describes a significant experiment conducted under his direction in the Providence, R. I. schools for the purpose of determining whether the use of sound films would enable the teacher to instruct a class of 150 pupils as effectively as a class of forty could be instructed without this aid. Every type of teaching aid which would help to enrich the unit of work was available to the control and experimental groups, with the exception that the experimental group substituted the aid of sound pictures for other devices for about thirty minutes each week. His report, however, gives little specific with respect to techniques, and is therefore only

mentioned here. For a full digest, see the treatment of the study on p. 311 under Research.

Stoddard, A. J. (Superintendent of Schools, Providence, R.I.) "Will Sound Pictures Tend to Increase Class Size?" *Nation's Schools.* 14:16-19. July 1934.

The Worrell procedure for presenting a large group film lesson is here summarized in detail because it is the result of careful deliberation with respect to the most effective technique for using motion pictures under the contract system being used in the Englewood school. The article by Baker defends further the position that motion pictures can be used effectively with large groups, especially with the contract method of instruction.

Herron undertook the use of films in the assembly with children of poor language ability as one form of enrichment. The steps in the preparation and follow-up of each film showing are listed.

Other articles which discuss the auditorium showing of films have been reviewed elsewhere in this compilation, and are here listed for purposes of clarity.

Jones, A. H. (Director of Visual Education, Gary, Ind.) "Visual Education in the Auditorium." *Visual Review.* 1930:17-18.

Stuart, Byron D. (Principal, Westfield, N.J.) "On the Use of Motion Pictures: Seven Years Experience Summarized." *New Jersey Educational Review.* 8:23. March 1935.

Meola, L. K. (Chairman, Visual Education, John Hay High School, Cleveland, Ohio) "Noon Movies—the New Educational Tool." *Educational Screen.* 14:224-7. October 1935.

Swarthout, Walter E. (Emerson School, Maywood, Illinois) "Recreational Motion Pictures in the School." *Educational Screen.* 14:97-8. April 1935.

Collier, Robert, Jr. (South High School, Denver) "Preparation and Presentation of a Science Night Program." *Educational Screen.* 14:219-22. October 1935.

Worrell, F. Marshall (Director of Visual Education, Junior High School, Englewood, N.J.) "Large-Group-Instruction through the Use of Visual Aids." *Educational Screen.* 15: 43-5. February 1936.

The following procedure with films and other aids was made possible because of the presence of sufficient equipment and operators, and because of the "contract" system of teaching in operation in the school.

It is based on the idea that films, slides and most demonstrations may be presented as effectively to large groups as to small classes. The principal scheduled all ninth grade science classes to meet in the auditorium during the three periods on Tuesday and Thursday for illustrated lectures, and each class was scheduled to meet individually for discussion and supervised study during the regular periods on Monday, Wednesday, and Friday. This arrangement left the science teachers with free periods for preparing the auditorium lessons, for securing and returning materials, etc.

Materials were requisitioned about three months in advance from catalogues and from records of films previously found suitable.

These are some of the steps followed by the teacher in charge of preparations for the large-group-instruction period:

1. A preview was held of the visual material the preceding afternoon and important facts noted.
2. If demonstrations or home-made slides were needed to supplement, they were prepared.
3. A plan of presentation was worked out in detail and the time required for each part accurately noted to insure the full utilization of the period.
4. A lighting schedule was made out for the boys in charge of lights, and one for the boy operating the projector.
5. When the blackboard or some stage setting was required, the work was done in the morning before the classes met.
6. Even auxiliary material was provided to be used in case of a breakdown during film projection.

Pupils were given assigned seats, monitors checked attendance, stage assistants were selected from among the mechanically

minded pupils, thus disposing of all routine matters in a minimum of time.

Film as introduction to a new unit: Topic—Transportation.

Three of the best students were assigned to prepare special reports on: Origin and Development of the Steam Engine; History of the Automobile; and History of Air Transportation for the large-group-instruction period. The sound film, *Development of Transportation,* was chosen as a fitting introduction to the unit.

The class period proceeded as follows: (a) a brief introductory talk by the teacher, emphasizing the importance of transportation in modern life; (b) showing of the film; (c) reports read by the three pupils over the sound system; (d) students were asked to write on the subject, Development of Transportation, based on the film and reports; (e) reshowing of the film.

During the following class period the better essays were read and discussed. The supervised study then centered about the topic, "Early Methods of Transportation."

Film as a direct teaching tool: Topic—Dynamo

The auditorium period proceeded as follows: (a) general review of static and galvanic electricity, their advantages and disadvantages, by the teacher; (b) a slide was projected with questions relating to dynamo, a new method of current generation; (c) a diagram drawn on the blackboard near which was placed a model of a dynamo. The teacher using the model and blackboard illustration explained the various questions on the slide, the teacher performing the experiments, and the pupils forming their conclusions; (d) the class was then shown the film, *Current Electricity,* with teacher comment. Students took notes to help them in further study.

A program of large-group-instruction has been enthusiastically received by pupils, teachers and administrators.

A similar program was subsequently worked out for teaching of geography and proved equally effective. Plans are being made for teaching of history and music appreciation in this manner. Only the lack of suitable classroom films limits possibilities of a more widespread use of large-group-instruction with visual material.

Baker, Arthur O. (Head of Science Dept., John Marshall High School, Cleveland, Ohio) "The Jones Rotary System of Instruction." *Educational Screen.* 15:107-10. April 1936.

The procedures which large group instruction with films hopes to be able to improve are:

1. The teacher's tendency to adhere strictly to the question, answer, discussion method.
2. Not using visual materials at all, or insufficiently.
3. Not correlating the use of films definitely with assignments—(For example, the class may be studying "Dairying with Milk Products" and the film shown to them may be on "Tuberculosis." Such indirect correlations are not very valuable.)
4. The showing of pictures for mere entertainment.
5. Failure to prepare assignments and tests based definitely on visual materials when used.
6. Emphasizing technical processes and the development of scientific skills in the laboratory. With the motion picture as an ally, work in the laboratory should become less technical and more exploratory.

The Jones Rotary System of Instruction is an experimental procedure being used in science and history in several schools in Cleveland with a view to developing the techniques involved in the visual route to education. New classroom instruction goals are:

1. Visual demonstrations delivered to large groups with a maximum of efficiency on the part of the instructor.
2. The use in large groups of lantern slides, silent and sound films, exhibit and demonstration material, and the microphone. Thus all pupils see and hear effectively.
3. The preparation of clarified assignments, and modern tests.
4. The preparation of such correlated work-sheet exercises, based upon the visual aids used, that lantern slides and films become agents of instruction demanding the attention of the student. Too frequently in the past visual aids have been used in classes in such a manner as to result in pure entertainment.
5. Discussions in groups of such small size that all members participate.
6. The development of leaders and leadership by placing students in charge of small groups for certain activities.
7. The establishment of teacher-pupil contact.
8. The inclusion of a reasonable amount of guided study.

9. The securing of such individual pupil activities as the performing of experiments and projects.

This teaching arrangement has cut the number of teaching periods from 30 to 24 a week; it provides an opportunity for teachers to plan their work; it avoids the monotony of routine presentations; and it uses visual aids with considerable effectiveness.

The article describes administrative procedures to follow in establishing this system of instruction.

Herron, John S. (Principal, Lafayette St. School, Newark, N.J.) "Motion Pictures As Stimulation for Written Language and History." *National Elementary Principal.* 15: 213-15. June 1936.

The procedure described treats only of the auditorium showings held during the past five years for the purpose of overcoming the language barrier of children who come from foreign-language homes. Teachers use additional films in the classroom.

The use of history films in the auditorium has aided in vitally improving written language work and in making American history something of a real experience rather than a confusion of hazy ideas. The school is of the platoon type, caring for 1,800 pupils who come from homes where foreign languages are spoken. The films used were the Yale Chronicles, the Abraham Lincoln series, and the Citizenship series. One week before a scheduled showing the teachers receive a summary from the Department of Visual Instruction. This is circulated among the teachers and discussed by pupils and teachers. The film and text stories are compared; vocabulary is noted and dictionaries used; the film episode is placed in its chronological relationship to other films seen; maps are used to place the locale of the film.

The showing is held in the auditorium in the presence of teachers and pupils. Forty of the 55 minutes are devoted to the screening. Immediately after the showing, the teachers provide for socialized discussions in the classroom. In the ensuing three weeks before another film showing occurs, the film experience is used to motivate written and oral expression. The class-made outline of the film is used as a basis for oral talks by each pupil. New words and phrases are placed on the board.

The children take turns in telling their version of the story, with corrections politely made at the end of each.

The written composition may be offered a paragraph at a time, or by a complete story. The use of new words and phrases in these compositions is encouraged. The principles of composition-writing—variety of expression, use of new words, complete sentences, unity—are stressed. These compositions are examined by the vice-principal, and one outstanding theme from each set becomes part of a traveling exhibit sent to all rooms. Each set of papers, with comments, is returned to the teacher, and the individual compositions filed by each pupil in his folder. Common errors noted by the vice-principal are incorporated into a paragraph to be studied by all the classes.

Part Three

SELECTING INSTRUCTIONAL MATERIALS

COMPILED BY

CHARLES F. HOBAN, JR.

SELECTING INSTRUCTIONAL MATERIALS

Most teachers and school administrators would readily agree that the effective use of instructional materials in the classroom depends in part on the care with which these materials have been selected. They would also agree that teaching materials should be selected with a view to their relation, directly or supplementarily, to all aspects of the objectives that have been accepted for teaching, to the appropriateness of these materials on various levels of pupil abilities, and to the qualities of these materials which make them easy for pupils to use and to understand.

Many of the materials of instruction commonly referred to as "visual aids" were used in the classroom long before the term was introduced into the educational vocabulary. Comenius, for instance, introduced illustrations as an integral part of the textbook when he published his *Orbis Pictus* in the seventeenth century. Illustrations were included in the *New England Primer,* the backbone of instructional materials of the colonial period. Throughout the development of American education, there has been an increase in the quantity of illustration included in school textbooks. In recent years a movement has developed which so emphasizes illustration that printed materials are subordinated, particularly in make-up, to pictures. The *Building America* series, published by the Society for Curriculum Study, is an example of this new type of study materials.

Accepted as are these visual materials of teaching in current practice, it is natural to expect that sound principles for their selection and use would have been developed, and that in modern school practice these principles would be rigorously applied. One would also expect that in the voluminous literature of education, there would be an abundance of

discussion, of reports of experimentation, and of the development of more or less standardized criteria for the selection of instructional materials.

But the administrator who searches for a scientific approach to his problems of selection and the teacher who looks for authoritative advice to supplement her rule of thumb criteria must stumble through the oak forest of educational literature to find the few sprigs of evaluative mistletoe. Two notable exceptions to this rule are the "Aids to Teaching in the Elementary School," *Thirteenth Yearbook,* National Elementary Principal, and "Materials of Instruction," *Eighth Yearbook* of the Department of Supervisors and Directors of Instruction, National Education Association, published in 1934 and 1935 respectively.

I. What Evaluators Have Found

The wide use of textbooks in the classroom makes the textbook illustration the most readily available of the visual aids. Even in the selection of these currently used materials, however, few principles have been adopted and fewer employed.

Melbo and Waterman [1] reported a study of pictures in geography textbooks in terms of the criteria set up for the selection of geography pictures in the *Thirty-Second Yearbook* of the National Society for the Study of Education. It was emphasized in this *Yearbook* that

> Pictures that show human activity or signs of human activity in its natural setting are of high geographic quality because they show or suggest (1) what man was doing in the place illustrated, (2) the kind of a place in which he was doing it, and (3) the ways in which natural and cultural facts revealed help to explain the adjustments people there have made to their natural environment.[2]

[1] Melbo, Irving R. and Waterman, Ivan R. "Pictures in Geography Textbooks." *Elementary School Journal.* 36:362-76. January 1936.

[2] Parker, Edith Putnam. "The Selection of Pictures." *In* Major Conclusions to Be Drawn from the Investigations, *Thirty-Second Yearbook.* National Society for the Study of Education. 1933. Chapter 10. p. 163.

While pictures showing either cultural or natural setting were stated to be of some use, it was indicated that pictures "should stress cultural features in their natural setting."

Upon examining a number of current geography texts, Melbo and Waterman found that on the average only between 20 and 25 per cent of the pictures included in these texts were devoted to cultural-natural subjects, that many portrayed only natural features, and that a surprisingly large number were not related to the subject matter covered in the verbal content of the texts.

The White brothers through their photographs of China have demonstrated another important quality which must be present in a good visual aid. James Henry White recently explained the contribution which his photographs were making in promoting international understanding, as follows:

"In the organization of material for teacher use and in our lecture work we have tried to maintain a balanced picture of art and life. This is very important in developing a visual program for our history and geography classes. . . . For one thing (the pictures) have proved that a beautiful still picture can be used as a means of educational entertainment. The trouble with many still pictures is that they lack artistic merit, and lack proper application of color. Art in visual education must be the standard of merit. Slides and prints must not only depict works of art, they must be works of art. It may cost a little more to produce high quality visual material, but it will be worth the extra cost in a definite reaction on the part of the student."[3]

An interesting problem was found to exist among the silent motion pictures available for the teaching of geography when a short course in visual aids was offered February 6-14, 1937, at the School of Adult Education, General Extension Division, University of Florida, Camp Roosevelt, Florida. Here a committee of teachers from various Florida school systems, under the chairmanship of H. F. Becker, of the geography department of the Florida Women's College, evaluated films and other visual aids from the same viewpoint as Melbo and Waterman evaluated textbook illustrations.

[3] White, James Henry (Lake Ariel, Penn.) "China's Life and Culture Visualized." *Educational Screen.* 16:118-19. April 1937.

Of the twenty-four silent films evaluated during this training program, only three were found to be "excellent" in their inclusion of material showing (a) human activities in their natural settings, and (b) natural features which may be used in building concepts of cultural-natural relationships. A film was considered "excellent" if over 85 per cent of its content met the criteria, "good" if between 60 and 85 per cent, "fair" if less than 60 per cent, and "poor" if less than 35 per cent. Films were rated separately for each of the criteria. There were, however, few variations. If a film was rated "excellent" for showing relationships, it was also found to be "excellent" for concept building elements. Six other silent films were reported to be "good," according to the two criteria, and three of the films viewed were reported to be of no geographic value, although produced for use in elementary school geography classes, and the remainder were divided between "fair" and "poor" classifications.

Among the sound motion pictures intended for geographic instruction in the elementary schools and reviewed at the Florida meeting, the situation was considerably worse. None was found to be of excellent quality, only two were found to be "good," seven were reported as of no geographic value, six were reported as "fair," and one as "poor." This situation was, in general, the result of the attempt to convert theatrical travelogues into "instructional" films.

The film slides viewed were generally of inferior quality. On the contrary, however, most of the glass slides reviewed by the geography committee were reported as of high quality for geography instruction.

II. Deriving Criteria for Selection

The evaluation of visual materials undertaken at Camp Roosevelt was not confined to the criteria of subject matter

relationships. Elements of technical quality, utility for direct or supplementary teaching, and appropriateness for specific grade levels were considered in determining the values of the visual aids for use in the Florida schools.

In any evaluation program three general criteria can be established on the basis of the three basic elements of the teaching situation: (1) what is being taught, (2) the children doing the learning, and (3) the materials which are to be used in teaching the children. Selection of teaching materials must be made, in general, on the basis of their contribution to the understandings, attitudes, skills, etc., which have been set as the objectives of instruction, on their appropriateness to the needs, the age, grade, and mental ability levels of the pupils, and on the basis of their technical or mechanical qualities which make them good sources of learning.

But these general criteria are subjects in the realm of academic abstraction unless they are understood in particular applications. There is a strong temptation to talk glibly about "appropriateness to age, grade, and mental ability levels" without attempting to ascertain what constitutes "appropriateness" to these levels. Similarly, much is said and written about "objectives of instruction," but teaching is frequently a day by day series of specific lessons taught from textbooks. Again, educators will agree that a picture should be photographically good, but little has been done to indicate what is desirable composition, what things in a picture are worth while to a child, how much of this pictorial experience is essential to proper concept building, etc. If criteria for selection of instructional materials are to be developed comprehensively in such form as to be applicable by teachers in classroom situations, the three general criteria enumerated must be reduced to more specific elements. The teacher must know what makes a picture effective on the

third rather than on the twelfth grade level, as well as those qualities which make it an effective tool of instruction on any school level. She must also know how pictorial experience should be varied on these levels to conform to the varied abilities of pupils.

There are two approaches to this problem. One is through the analysis of the material itself, and the second is through the analysis of pupil responses to this material. Both approaches are essential.

It is possible, for instance, to determine what teaching material should be used to develop an understanding and appreciation of the process of plant growth when there are films available which show this process in time-lapse photography.

It is also possible to determine in part whether a motion picture on cotton is appropriate to the teaching of a particular unit from analysis of its pictorial and verbal content. If one of the major objectives of instruction is an understanding of the steps in the process by which cotton is planted, cultivated, and prepared for market, any of several ordinary instructional films now available will contribute elements of experience toward this objective. If, however, the objectives of instruction are broadened into the context of human relations—if the problems of working and living human welfare that are inextricably woven into the agrarian and industrial relations of cotton are considered—a process film, of itself, will be insufficient. The addition of March of Time's *King Cotton's Slaves,* which treats of the poverty and futility of the sharecropper's existence, or the dramatic *Cabin in the Cotton,* an adaptation of one of Paul Green's North Carolina folk plays, will contribute to the development of human insights and appreciations. As we cross our traditional subject-matter borders and approach our educational objectives in their developing functional relations, we must first analyze the experience which is essential to the full

development of insights and understandings of integrated wholes and then select those materials which contribute to the enrichment of new integrated patterns of behavior.

Let us hold constant the objectives of instruction, and consider the technical qualities of the photographic material and its appropriateness to various levels of pupil maturity. Immediately, we must face the question, "What makes a picture good for second-grade children? for eighth-grade children?"

The answer to these questions cannot be derived from a purely logical analysis. We may, of course, assume that as children grow older the number of elements shown in a picture may be increased. But this rule is vague. It does not help particularly in the practical situation where we find children of widely varying abilities in any given school grade and where we find widely overlapping abilities among various grades.

In order to find the elements of instructional material appropriate to various levels of pupil abilities we must look to the pupils themselves. An experimental program must be set up in which pupil responses to various types of material are studied on various levels. In this way we can discover what in the materials themselves make them good teaching tools for pupils of varying abilities.

This experimental approach may be made in two ways, the one through controlled experimental procedures, and the other through the service type of study in which a teacher adopts the experimental attitude with her pupils, varies the conditions of instruction, and observes the reactions of her pupils to these varying conditions.

Some controlled experimental investigations have been made on the use of pictures and other concrete teaching aids with children. MacLean [4] reported some data on the use

[4] MacLean, W. P. "A Comparison of Colored and Uncolored Pictures." *Educational Screen.* 9:196-9. September 1930.

of color in pictures. For portraying distance, enhancing contrasts, and conveying impressions of sunlight and warmth, the use of color was reported to be superior to black and white representation. On the other hand, he reported that the use of color seems to have less value when the purpose is to show architectural and engineering details, and that the use of color may be actually harmful in concentrating the observer's attention to portions of the illustrations.

General conclusions which may be drawn from other experimental investigations, particularly as they relate to the effect of pictures in motivating reading, have been summarized by Goodykoontz [5] as follows:

1. Children like books that have at least a quarter of the book space given to pictures.
2. Children like full page or fairly large pictures.
3. Children prefer strong colors.
4. Bold color groups with few but striking details are better than many details.
5. Realistic pictures are preferable to conventionalized pictures.
6. Action, humor, and a story are favorite picture types.
7. Young children like a broader range of picture subject matter than they usually receive.
8. Young children do not care especially for pictures of child activities.
9. Older children like pictures related to in-school and informational interests.

A few attempts were made to determine what elements of instructional motion pictures make them effective with children. The results of these investigations were utilized by Doane (7), in his attempt to set up criteria for the evaluation of educational films.

The controlled experiment is, generally speaking, not appropriate for use by the teacher in the classroom. The teacher may lack the necessary statistical training and experience in experimental techniques. Even when this training

[5] Goodykoontz, Bess. "The Relation of Pictures to Reading Comprehension." *Elementary English Review.* 13:125-30. April 1936.

and experience are available, it is difficult to arrange the controls in varying classroom situations which are necessary to so-called "scientific" results.

It is possible, however, for the teacher to adopt an experimental attitude toward teaching and to use the classroom as a laboratory for the study of child behavior and for the development of the art of teaching. While this attitude has been adopted by many teachers, the results of their study have escaped publication. In part educational periodicals are to blame for this situation. They have placed such an emphasis in recent years on the reporting of so-called "objective data" in the journals that teachers are discouraged from writing articles describing their teaching situations, what needs were found from careful observation of children, and what techniques were found to be effective in particular situations. Consequently, the educational literature is discouragingly free of articles of this sort. As a result, when we search the literature for basic material on the evaluation of instructional materials, we find relatively little that reaches into the heart of the situation and offers specific help. There is immediate need for service studies of pupil reactions to various types of instructional materials and for the reporting of these studies in the educational journals.

III. Digests of Published Literature

Of approximately 20 articles dealing with the selection and evaluation of materials of instruction, particularly those referred to as visual aids, a few have been selected as representative and have been summarized. In these articles are included most of the significant comments, criteria, etc., that are contained in the others. They were selected for inclusion here because of their comprehensiveness.

The first of the summaries deals with the selection and organization of the materials of instruction, the second, third,

and fourth with the criteria for selecting pictures, and the fifth, sixth, and seventh with criteria for selecting and evaluating motion pictures, and the eighth with elements which contribute to reality of pictorial experience.

(1) **English, Mildred and Stratemeyer, Florence B.** "Selection and Organization of Materials of Instruction." *Eighth Yearbook.* Department of Supervisors and Directors of Instruction, N.E.A. 1935. p. 129-48.

There is growing at a rapidly accelerating rate a vast body of materials of instruction—a wide range of books, magazines, pamphlets, pictures, newspapers, maps, charts, exhibits, records, and the like—which suggest potential "service tools" in the teaching-learning process. The teacher has the problem of the selection of such materials and the problem of refinement of the materials themselves. Both problems are contingent upon (1) a knowledge of and acquaintance with available sources of material, and (2) the ability to evaluate these materials in terms of stated criteria or standards.

It must be recognized that any set of standards governing selection are concerned with (1) the educational point of view held, (2) the background, abilities, needs, interests, and (3) the goals or purposes of that group.

The following criteria for selection of materials is presented as being in harmony with educational principles upon which the *Yearbook* is based.

1. The materials should be selected in terms of their bearing upon experiences or problems being considered by the group.
   a. Selected to give fuller meaning to daily experiences.
   b. Selected for natural contribution to the development of the experience or situation without imposing that which is unrelated.

2. Materials should be selected to lead to an understanding of fundamental concepts, generalizations, and principles—controls based upon facts and experiences which give power to meet new situations.

3. Materials selected should be within the range of understanding of the group—selected from real situations on the level of the child's understanding and in accord with pupil interests and needs.

4. Materials should provide for individual differences in ability, interest, and need—provide for individual growth within group activity.

5. Materials should be so selected and used as to help children to grow in self-direction in the choice and evaluation of materials.

6. Select materials, noting basic purposes for which the material has been developed and test its validity in the light of known truths and facts. Picture materials, as slides and films, do not always tell the truth. A check on authenticity, sensitivity to varied points of view and the continued search for materials to make the several viewpoints available, and the recognition of propaganda as propaganda are involved.

7. Differentiate in the selection and organization of materials between those having permanent values and those concerned with temporary or passing interests.

8. Selection should provide for balance and variety in types of material. This is significant by way of

   a. Acquainting pupils with a wide range of sources
   b. Recognizing basic factors conditioning interest
   c. Stimulating new interests through different media
   d. Allowing for individual differences
   e. Providing stimuli to the learner's own creative powers
   f. Providing for the all-round development of the individual

9. Materials should have appropriate mechanical make-up

   a. Clearness and conciseness and interest value
   b. Attractiveness, useableness
   c. Mechanical durability and suitability
   d. Proper methods of emphasizing important phases of work
   e. Convenience

The article also includes sections on the development of a materials bureau and on mounting and preserving materials.[6]

(2) **Abrams, Alfred W.** "Standards for the Selection of Pictures." *New York State Education.* 19:281-3. December 1931.

More pictures are being placed before pupils than ever before. Yet little thought is given to what constitutes the essential characteristics of acceptable pictures for the work to be accomplished.

[6]See Administration. Part One, p. 90.

If desirable results are to be obtained, pictures cannot be carelessly chosen or used, the pictures must have certain characteristics. Some of these follow:

1. Truthfulness. It is as necessary that the pictures be truthful as the written material. Yet pictures are found in textbooks which give false ideas to children.

2. Authenticity. Portraits should be accompanied with data as to the time; age of the person pictured; if a painting, the name of the painter; etc.

3. Quality. The quality of the picture, as well as the idea which it expresses, is important if the picture is to be of the greatest educational value.

4. Significance. A picture may contribute much or it may be of very small consequence. A loss of time is involved in the use of insignificant pictures.

5. Attractiveness. Facts should be presented in a pleasing manner. The picture should have pictorial merit.

(3) **Trolinger, Lelia.** "Characteristics in Still Pictures for Instructional Use in the Classroom." *Educational Screen.* 14:217-19. October 1935.

Suggestions for the rating scale were received from a group contacted by a trial questionnaire. With these suggestions, a new questionnaire was made and sent to about seventy of the visual education experts of the country. There was general agreement that the scale should be divided into two parts, techni-

Technical Quality—40 Points

A Picture Should Be:	Mean	Mode
Artistic	11	10
Clear and Definite	11	10
Free from Blemishes	5	5
Of Practical Size	7	10
Properly Colored	6	5

Instructional Quality—60 Points

	Mean	Mode
Truthful	15	15
Authentic	8	10
Relevant	11	10
Significant	9	10
Stimulative	11	10
Suggestive of Size	6	5
		100

cal and instructional. The division of scale points on a 40-60 basis was almost unanimously adopted. There was considerable variation in the individual point values assigned. The mean and the mode are shown.

(4) **Thralls, Zoe A.** "The Selection and Use of Pictures." *Journal of the National Education Association.* 21:247-8. November 1932.

Much of our present geographic knowledge has been accumulated by actual landscape surveys and further observation must be acquired in the same way. There the ability to read landscapes is a basic skill. Since in school the observation of actual landscapes is limited we must use pictures. These must be used as a source of information and as a basis for geographic reasoning.

A criterion for the selection of pictures for geographic instruction is established by the definition of geography. An ideal picture of high geographic quality should show a human activity in its natural setting. On this basis pictures fall into three groups:

1. Those which possess inherent or primary geography quality because of the completeness with which they show or suggest the adjustment of man's activities to the natural landscape.

2. Those which possess secondary quality because they do not directly show or suggest such relationships. They have value because atmosphere is conveyed even though the geographic phase has to be conveyed by another picture or by words.

3. Those concerned primarily with cultural items which do not suggest relation to the natural environment. Sometimes these are necessary to convey concrete impressions.

In considering any picture to be used in geographic instruction, the teacher should ask herself two questions:

1. Does this picture contribute to an understanding of the geographic relationships which should be developed in this unit?

2. Can I use it so as to bring out geographic relationships?

Pictures may be classified on the basis of both quality and use of pictures according to the following levels of geographic instruction:

1. To give concrete images of specific natural and cultural items in the landscape of a particular region. (Relationships between food, clothing, shelter, means of travel, types of work, and elements of the natural environment.)

2. Human use regions—deals with the relationships between the distribution of types of work and population and the natural environment. Pictures connected with this level should be connected with maps to give the idea of the distribution of particular activities.

3. The country. Pictures should be selected with a view of bringing out the outstanding adjustments in a country—pictures of the human use regions within that country. Proper balance must be maintained so that the several activities of the country shall be properly emphasized.

4. Countries where there are native populations and transplanted groups. Pictures should show the adjustments both groups have made to the natural environment and bring out the contrast between the adjustments of people with a different cultural heritage in the same natural environment. A proper balance should be maintained. The children should come to recognize the influence of the original homelands on the transplanted people.

5. For the fifth level and beyond, pictures become of relatively less importance. The pictures give comparatively few new concepts but may be used in new combination, as for instance the rubber industry—raw materials and manufacture.

(There follow some suggestions for the use of pictures in teaching.)

(5) **Dale, Edgar.** "Standards for the Selection of Classroom Motion Pictures." Thirteenth Yearbook. *National Elementary Principal.* 13:344-8. June 1934.

I. Do films harmonize with the objectives of the school?
   1. Are visual aids necessary in attaining the objectives?
   2. If aids are necessary, what type shall be used?
      a. The motion picture is dynamic; it shows processes, development, and change.
      b. The still picture is static; it shows products and results.
      c. Perhaps an excursion will serve best for some types of experiences.
      d. Advantages of the film over the excursion.
         (1) It is more economical of time.
         (2) Only the materials necessary to understand the process are included.
         (3) There are fewer distractions.

(4) The teacher can comment during the showing of the film.
(5) Animated drawings can show processes which cannot be seen by first-hand observation.

II. Is the material in the film accurate?

III. Are the films satisfactory from a technical point of view?
1. Sharp definition is essential.
2. Most scenes should be taken in closeups.
3. The acting of characters who are introduced into the picture must be effective.
4. The photography should be steady.
5. All scenes in the picture should reflect good composition.
6. The animated drawings used in the classroom should show careful planning and skillful rendering.

IV. Will the films be satisfactorily understood by the pupils?
1. Titles and vocabulary
2. Length of film
3. Simple, unified, and coherent organization
   a. Types of sequence
      (1) Chronological
      (2) From familiar to unfamiliar
      (3) Tracing development, as in a factory
      (4) Causal
   b. Transitions should be smoothly developed.
   c. Nothing should obscure the central idea of the film.

V. Will the cost and the total number of showings utilized make films desirable investments?

VI. Will the teachers use the films?

(6) **Brunstetter, M. R.** "Selecting Educational Talking Pictures." *School Executives Magazine.* 54:364-5. August 1935.

A film library should be made up of excellent films, otherwise it will soon be cluttered up with inferior materials. The instructional value of a film is the direct outgrowth of the care and professional skill which has gone into its production. A poor film may be just a waste of time or may even do positive harm.

Standards on which to base judgments are important. The material should be directly related to the course of study, it should be presented in an interesting manner, and it should be adapted to the child's level of comprehension. The technical aspects of the film should, however, be considered in greater detail.

Even with an appraisal form the rating is still more or less subjective. Therefore, the rating should represent the combined opinion of several skilled reviewers, using a common set of standards. The film should be projected several times, so that the reviewers may know thoroughly the objectives of the film, the content and the method of treatment.

The work should be done with specific uses and purposes for the film clearly in mind. Films show legitimate differences when made for different purposes.

The following appraisal form is that used by a producer in this field to guide the various steps in production and to evaluate the finished product. On each item the film is to be rated as excellent, good, fair, poor, or objectionable. In Mr. Brunstetter's article other subdivisions are given, not included here.

Appraisal Form for Educational Talking Pictures

I. Objectives of the Picture
   - A. Clearness
   - B. Validity
   - C. Scope

II. Content of the Picture
   - A. Appropriateness
   - B. Accuracy of Content
   - C. Thoroughness of Content

III. Development of Content
   - A. Development for Unity
   - B. Development for Understanding
   - C. Development for Emphasis

IV. Technical Audio-Visual Elements
   - A. Treatment of Pictorial Material
   - B. Treatment of Sound Material
   - C. Cast

V. Contributions to Other Curriculum Materials
   - A. Contributions to the Same Field
   - B. Contributions to Related Fields

VI. Overview of General Effectiveness
   - A. Educational Values
   - B. Artistic Values

General Rating

(7) **Doane, Donald C.** "What Makes a Good Educational Film?" *Educational Screen.* 15:203-6, 239-41, 271-3, 305-7. September, October, November, December 1936.

The problem of what makes a good educational film is attacked in this series of articles from three standpoints.

1. What has been determined in previous experimental investigations?
2. What criticisms have been directed against educational motion pictures?
3. What types of films do teachers choose?

After studying the results of previous experiments, Doane arrives at the following summarization of the desirable and undesirable characteristics of educational films.

Desirable characteristics:

1. Correlation with and integration into the usual course of study for the subject and grade intended.
2. Limitation to presentation of facts.
3. Provision for future activity; challenging future thought.
4. The best possible degree of technical perfection.
5. In general, limiting the length to one reel at most.

Undesirable characteristics:

1. Presentation of material which can be presented otherwise, either by an identical presentation, or equally effectively in another way.
2. Material familiar to the pupils for which the film is intended.
3. Aims to create attitudes or to influence behavior, or presentation of general ideas.
4. An excess of titles or pictures not involving motion.
5. An excess of maps, tables, and non-moving diagrams.
6. Teaching how to perform an activity (e.g., a laboratory experiment).
7. Sound accompaniment consisting of a lecture only.

Important questions not established:

1. Relative effectiveness of otherwise identical sound and silent films.
2. The grades in which the film is most effective. Tentatively, however, the best opening for the film appears to be the secondary school.

Following are criticisms which have been directed against educational films. In general, these are not backed by experimental proof.

1. Films too long
2. Topic too large or broad
   a. Attempt to cover too much subject matter in a short time
   b. Sequence and mode of attack predetermined
   c. Attempt to be self-sufficient, replacing teacher, books, demonstrations, etc.
3. Not adapted to pupils psychologically
   a. Not suited for age level of pupil
   b. Child's interpretation is not considered.
4. Subject of film poor
   a. Could be better presented otherwise
   b. Subject not worthy of place in curriculum
   c. Pupils not interested in subject
   d. Not conscious appeal to a specific learning; e.g., skills, ideas, attitudes, facts, insights.
5. Unity of subject matter lacking
   a. Remotely related material added to complete reel
   b. No continuity
   c. Absence of main problem about which all scenes or minor problems revolve
   d. Minor points not subordinated to main point
   e. Main problem not vital, gripping, interesting, or appealing to curiosity.
6. Not challenging to further thought
   a. Pouring instruction, not pulling ideas out.
7. Poor subject matter
   a. Inaccurate
   b. Unusual matters presented as typical
   c. Figures on films are seldom remembered
   d. Too many pictures not involving motion
   e. Presence of details much better presented otherwise
   f. Visual experience familiar to pupils
   g. Moving pictures when still pictures would serve as well.
8. Mechanical details of film poor
   a. Scenes are too short and fugitive
   b. Poor proportioning of parts of pictures
   c. Technically poor
   d. Mechanical mode of presentation poor
   e. Poor directing.

9. No supplementary material supplied; e.g., teachers' guides, etc.

In order to discover the types of films which teachers choose, a study was made of the booking from the Department of Visual Instruction of the University of California Extension Division over a one and one-half year period. Only films of the 16-mm. size, one reel in length, and renting for $1 were considered.

The popularity of films according to subjects was in the following order: (1) physiology and health, (2) physical sciences, (3) biology, (4) geography (industrial), (5) geography (physical and human), (6) vocational guidance, and (7) nature study.

An analysis was made of the films to find the influence of the presence or absence of certain characteristics in determining teachers' choices. The following conclusions may be drawn.

Geography Films

1. The film should be concerned with a country or region prominent in the curriculum of the schools for which it is intended.
2. It makes little difference whether the film deals with the physical, human, industrial, or general aspects of the subject.
3. Local interest has little influence, except when the subject is too much within the experience of the pupils.

Natural Science

1. For elementary nature study films, the results showed an advantage in favor of familiar subject matter of unusual, non-typical topics.
2. Films which consist of animals, plants, etc., merely pictures and not built up as a curricular lesson, constitute the poorest field studied.
3. The subject should have a prominent place in the curriculum.
4. Films for secondary schools are more in demand than for elementary schools.

Physical Science

1. The subject must be important in the curriculum.
2. A broad subject is desirable unless particularly adapted to the curriculum.
3. Industrial films are not successful, when rental is charged.

4. Best subjects are those adapted to both secondary school science and general science.

Other Subjects

History subjects should be ones prominent in the curriculum. The price cannot be raised appreciably regardless of the length of the film.

Civics and citizenship films are low in demand. This is a difficult field in which to construct good films. They are likely to become out-dated relatively soon.

Vocational guidance promises to be a good field. There was considerable demand for films but disappointment was expressed with the type of films available.

From a study of repeat bookings, it appears that teachers are most favorably impressed with science films involving study, presenting problems, and preferably strictly curricular in nature. They are not quite so well impressed with films which are largely illustrative, merely picturing animals or plants, and generally unfavorably impressed with films involving acting or which in any way may be compared with the current theatrical product. Films involving acting must be expertly done if they are to be successful.

There were two purposes in the collection of the above data: (1) To provide a guide for the producer in constructing and judging films; (2) To provide distributors with a check list to aid in evaluating films the acquisition of which is contemplated.

A check list is given which has three main parts, i.e., subject matter, method of presentation, and technical make-up of the film. Each has a number of subdivisions. There are in all thirty-three statements to be checked. No weightings are given the different points. Such weightings would be assigned by subjective opinion. Furthermore, the absence of one trait alone may be sufficient to condemn a film. A producer, distributor, or those in charge of a school system will be interested in the check list. The points mentioned should be kept in mind while making a film. It will serve as a basis for judging a film to be purchased.

A chart is shown which indicates the probable demand for films dealing with various subjects. One contemplating acquisition of a film for distribution, or production of a film for sale or distribution to schools will be interested in it. By means of this chart one can roughly predict the probable demand for

the film. (The check list and chart are included. *Educational Screen.* December 1936, p. 306-7).

(8) **Merton, Mineta** (Waukesha Junior-Senior High School, Wis.) "Vitalizing Teaching through the Correct Use of the Still Picture." *Educational Screen.* 16:115-16. April 1937.

The new three R's of the child centered school may be classified as: Reality, reasoning, and research. Visual aids have contributed richly in realizing these new trends in education.

In utilizing pictures there are several factors about a picture which it is well to train children to consider:

1. Size
2. Temperature
3. Motion
4. Sound
5. Distance
6. Depth
7. Color
8. Odor
9. Speed
10. Weight

The applicability of these criteria to judging and using *motion pictures* is obvious.

IV. Supplementary Bibliography

The following check-lists should be consulted. Because they are checklists they have not been digested.

Devereux, Frederick L. "Check-List for Evaluating Educational Talking Pictures." Appendix in *The Educational Talking Picture.* University of Chicago Press. Chicago. 1933. p. 204-10.

Hollis, A. P. "A Score Card for Judging Values of Informational Pictures." In *Motion Pictures for Instruction.* Century Company. N.Y. Chapter 8. p. 197-207.

Weber, Joseph J. "Proposed Standards for Evaluating Instructional Films." In *Motion Pictures and Lantern Slides for Elementary Visual Education.* H. Emmett Brown and Joy Bird. Bureau of Publications of Teachers College. Teachers College, Columbia University. New York. 1931. p. 5.

Articles by Walters, Shriner and Winchell in Part Two, Section on Teaching Techniques, indicate some of the ways in which pupil reactions were considered by the teacher in selecting materials for further use.

Part Four

FILM PRODUCTION IN SCHOOLS

COMPILED BY

EDGAR DALE

FILM PRODUCTION IN SCHOOLS

Introduction

In 1923 the Eastman Kodak Company put on the market its first 16 mm. camera. This fact of chronology is important because it has genuine significance as far as the history of the use of motion pictures in the schools is concerned. We find further that in 1927-28 the Eastman Kodak Company was beginning and carrying out its experiments dealing with twenty 16 mm. motion pictures which they had made for that purpose. In 1928 the Eastman Kodak Company began the commercial production of 16 mm. educational films. Today more than 225 of these films have been made available to the schools.

With the advent of the 16 mm. camera and greatly reduced prices of projection equipment, it became possible for the amateur to experiment in the producing of his own films. There followed a widespread making of motion pictures dealing with family life, travel, and so forth.

It is interesting to note that out of the thirty-seven articles presented here dealing with film production in the schools, only two appeared before 1930, five before 1933 and thirty between 1933 and the present. It is evident that more work is now being done in the field. It should be pointed out too that, like the iceberg, the greater part is below the surface as compared with what one sees on top. There is a tremendous amount of activity of this sort which has never been written up for publication.

The writer had ample opportunity to secure evidence on this fact at the first state-wide meeting ever held concerning the production of motion pictures in schools, which took place on the Ohio State University campus February 13, 1937.

At that time more than thirty-five educational and welfare workers assembled not only to discuss films but also to screen some of the films which they had made. In that conference, three major problems arose: first, what aspects of school activity lend themselves to the motion-picture photographic process; and second, how shall we produce these films? A third problem, not treated at all extensively in the articles, but one very crucial in the minds of workers in this field, is: how is the production of these films to be financed? Similar problems are noted as one analyzes the literature in the field of motion picture production in schools.

I. Areas of Production

A. *Creative Dramatics*

Many of the film productions of schools have developed in the "appreciation" area, including not only dramatics, literature and art, but also motion picture appreciation. Several articles and news items have been summarized in the following pages to indicate the various ways in which amateur cinematography was successfully used to enrich the school curriculum. Some of the projects were undertaken as part of the regular classroom work, whereas others were extra-curricular in nature. English, social studies, Latin, and character education, are some of the areas in which dramatized motion pictures were used. It is hoped that these accounts will be suggestive to teachers in other fields of instruction.

Augustine, Harold M. "Creative Dramatics in Montclair High School." *Junior-Senior High School Clearing House.* 7:230-3. December 1932.

The author compares old and new methods of teaching dramatics. Formerly the teacher chose the play (usually some "classic") and picked out the "best" actors, who then put on the play. The newer methods, however, bring in a variety of

student activity, and include the production of short plays and one-act plays, even of student-written plays and films.

The first film produced by the dramatics group in Montclair High School was humorous satire, "She Stoops to Crank'er." The group also planned to correlate civic study and dramatics through the production of a film based on the widespread community interest in town planning. In addition to the indirect teaching of civic problems, the students derived certain values from this type of activity. It gave an opportunity to learn to act, without the drudgery of memorizing lines, and furnished motivations for original reading and research in fields not represented in textbooks.

A sample student scenario is included, titled "Peter Plans Podunk." The story is that of Peter who, returning from college, convinces the townspeople that the town should be well planned if it is to be selected as the site for a large motor production plant.

Putnam, Sarah and **Tompkins, Harrison.** "The Park School Drama Club Presents . . ." *Progressive Education.* 13:446-53. October 1936.

The Park School, Baltimore, Maryland, wished to help its students to understand the implicit values and deficiencies of the motion picture. It was decided that this would be done by giving the children an opportunity to produce their own films. The high-school dramatic club of fifty boys and girls was eager to do this work, since they had had previous experience in drama as a craft, an art, and a business enterprise, and had lighting and camera equipment.

A school-wide scenario contest yielded a script based on *Silas Marner.* The theme of the story dealt with the necessity of a human being to love generously. A synopsis of the four-reel (2000 feet, 16 mm.) film is included.

The problems were threefold: to arrange the shooting schedule within the time and place limitations, to bring together the proper characters at the right time, and to find easily accessible and filmable settings. The group took 2500 feet of film, traveled around the countryside for settings and costumes, and learned about make-up and acting. Work was done during the free activity day every third Friday.

The actors were selected by the instructors, were well cast, and acted naturally. Many were boys and girls who found their first social experiences while working with a group on the film. Costuming was done by using and refurbishing available costumes from school plays, or out of old attics. The filming of two scenes—in the ballroom and at the chimney place—is described. Then came the activities of editing, splicing, cleaning, advertising, preparing musical accompaniments, and the final showing.

An attempt was made to defray the cost of production ($230) by charging admissions to public showings of the film before a second print had been made from the original. This proved to be a mistake, however, since the film was scratched and marred to such an extent that it could not be reproduced later.

The authors found that a short film would have been a better activity than the long one attempted, that technical effects could be improved by the study of still photography (a photography club is growing out of this activity), that appreciation of commercial films was unified and enhanced, and that the students gained much in resourcefulness, self-confidence, and ability to work together in carrying through a project.

Whitehead, Louise G. "The Motion Picture as a Medium of Class Instruction." *English Journal.* 26:315-17. April 1937.

A first-year English class in a Los Angeles high school voted to make a movie based on *David Copperfield.* A technical committee was chosen to make plans for the film, student-owned cameras were made available, and the student body purchased three hundred feet of 16 mm. film. Nine scenes were selected from the book and members of the class wrote each episode, which was then criticized and re-written until the script committee was satisfied. "Sets" were planned by the art committee. The costume committee did library research, and even borrowed the original costume "stills" from the M.G.M. production of *David Copperfield.* This commercial production was also viewed by the students, and it was decided that their own "Scenes from David Copperfield" must be simple.

Tryouts were held before the class, under the supervision of a student "director." Each child wrote a letter to his parents explaining the project. Titles were written and filmed and the scenes were taken out-of-doors, which saved the trouble and

expense of extra lighting. "Flats" were utilized on the patio for interior scenes, and most of the camera work was done during the hour class period. The completed film was shown to two hundred parents on "Open House Night" and to the school assembly.

The author of the article declares, "I have directed no class study of *David Copperfield* in which a comparable knowledge of the story was developed, nor a similar amount of thoughtful written work done." She also states that this project "satisfied the three requirements of an instructional motion picture" in that it "(1) provided opportunities for research and creative effort; (2) produced a summarization that pupils and parents could see and appreciate; and (3) gave a film that might be shown to other teachers illustrative of experimental class procedure."

Hamilton, Delight C. "An Experiment with Treasure Island." *English Journal.* 20:415-16. May 1931.

Committees of students in the Newberg (Oregon) High School worked on preliminary steps to the filming of the story *Treasure Island.* Written application was made by students for assignments as scenario editors, managers, costumers, stage men, and so forth. The story was read for scenes to be included in the film. Scenario writing was studied, a continuity was worked out, and the scenes were finally edited to fit a 400-foot reel. Sets were prepared during activity periods, costumes were designed, make-up charts were studied.

The film was then photographed, titled, edited, and a general showing planned. Oral announcements of this showing were presented to other classes in the school.

In general, this study of *Treasure Island* became a vital experience for the students, long to be remembered.

"Wild West Film Produced by Doylestown Pupils." *Nations Schools.* 17:76. May 1936.

Students in the photoplay appreciation class at the Doylestown High School, under the direction of Margaret K. Lehman, head of the English Department, wrote a burlesqued wild west story, which was then filmed by the students. The production was done on a farm, using a denuded buggy, a watch tower, and

railroad tracks. The sure-fire story centered about a lovelorn heroine, a villain who tied her to the railroad tracks, and a hero who arrived in the nick of time.

The students learned the difficulties attached to artistic photography and the time and skill required to produce even so small a film as this.

"Syracuse University Plans Film Production. *Educational Screen.* 15:192. June 1936.

Syracuse University plans to produce a full-length 35 mm. talking picture as a laboratory project, utilizing students enrolled in a special summer cinema appreciation course for both players and technicians. Selected for the experiment is *Big Lake,* Lynn Rigg's study of adolescent youth in Oklahoma. Every effort will be made to meet professional standards in this production.

"Character Education—Courtesy." In *Handbook for the Use of Visual Aids.* Bulletin No. 18. Board of Public Education. Pittsburgh, Pa. 1929. p. 55.

A general program for developing desirable habits of courtesy in the school, the home, on the street, and in society will be greatly aided by the preparation of an original film in which the students have assisted. The entire unit on courtesy will be climaxed by the showing of this film.

Thornquist, Marie H. "Our Kindergarten Movie." *Educational Screen.* 14:82. March 1935.

The kindergarten movie entitled, "Dramatic Play in the Kindergarten," represents a real unit as it developed in the Clifford Street School, Los Angeles, California. The children decided to build a colonial house and furnish it. They secured their information about houses from a stillfilm roll showing different kinds of homes, from magazine pictures, and from a walk through the neighborhood. When the house was finished it was very completely furnished, the furnishings being made by the children. Cut-out pictures from magazines gave them ideas for the furnishing of each room.

For some time after its completion the children derived much pleasure from playing with the house. They took turns in performing the various duties about the home. The play was so

spontaneous and natural that it was decided to attempt the recording of what the children were doing in the form of a movie. The cost was reduced by one of the patrons, who secured the assistance of a Japanese cameraman in photographing the picture.

The film is of an entire unit which developed as it should—children leading, teacher guiding. Rehearsals were not used. No two performances were ever the same. The performance was truly spontaneous play, so that the cameraman was not obliged to take the picture over again, in so far as the children's acting was concerned.

Forrest, Elaine S. "A Novel Latin Project." *Child Welfare.* 25:178. November 1930.

Students of the Classical Club of the Central Junior High School, New Rochelle, New York, under the direction of Mrs. Mary B. Albertson, wrote, acted, and presented their own film version of "Atalanta and the Golden Apples." The project took a whole year, meeting one-half hour weekly.

During the fall and winter, the students studied the life, society, costumes and customs of the Greeks and Romans. They then made the costumes, and used the school backgrounds for settings. A student handled the photography and wrote the titles.

The completed film was shown to the whole school and was enthusiastically received.

Bailey, Helen M. "We Discover China." *California Journal of Secondary Education.* 11:43-6. January 1936.

A unit on Chinese life had been prepared and published by the author. An opportunity was afforded to teach this unit in a ninth year social studies class in a Los Angeles school, for a single period daily over a period of six weeks. The unit centered around the making of their own films.

The students had studied the Crusades, and from this topic proceeded to Marco Polo and his travels in China. The class was organized to make a Modern Marco Polo Tour, with individuals and groups taking special "trips." Students used the *National Geographic Magazine, Asia Magazine,* books from school and public libraries, the teacher's collection of sketches, Chinese prints, embroidery and handicrafts.

They were anxious to visit and make film records of Chinese homes in Los Angeles, Chinese students at the University, and Chinese restaurants. Sixteen dollars worth of film was purchased.

First there was a preliminary filming of a Chinese restaurant and an ancestral family temple. Students then selected their own directors and technical workers, and began to work out a scenario. Further films were taken of sunken Chinese gardens, Chinese curio stores, as well as a Chinese play put on by the students and other classroom activities. Editing was done by the group as a whole, titles were suggested, and a committee did the mechanical work of splicing. A contest for the best name brought, *We Discover China.*

The students mimeographed their own invitations for the film showing and wrote up the project in a large book. The film received a favorable write-up in the school paper.

Katz, Elias. "Making Movies in the Class Room." *Clearing House.* 11:153-6. November 1936.

The article is based on the author's experiences with film-making at the Lincoln School and the Horace Mann School for Girls, Teachers College, Columbia University.

Film-making arouses intense student interest. Students are faced with special problems requiring the exercise of initiative, resourcefulness, and intensive research. Moreover, all work proceeds on a cooperative basis.

Some of the problems in film production which students and teachers face are: selection of the theme, preparation of the script, planning the settings, designing the costumes, conducting the necessary research, acting, photographing the action, editing the continuity, preparing sound effects to accompany the showing, and finally planning for the big performance.

Synopses are included of *Brothers of Altamira,* a film on primitive life, which shows the struggle of two brothers against the wicked old Chief of the tribe, and their love for one another, and *Their Adopted Country,* which details the life of a group of Italian immigrants and their adjustment to a new society in America.

Some groups went out on excursions, looking for "material" and settings, making contacts and meeting situations requiring self-control and ingenuity. Acting produced best results when

filmed directly following brief rehearsals. Editing was an important part of the activity, involving classification, rough assembling of scenes, and final adjustment of sequences.

Values from this activity include permanent learnings which develop out of highly self-motivated activity and countless opportunities for creative expression in dramatization, building sets, costumes, visits. Also, there is a discipline which comes out of selecting and judging which scene, actor, or costume is most appropriate at a given point. Students and teachers who participate in this activity develop a keener and more critical attitude towards the motion pictures they see in theatres. The author suggests that making films is one of the best ways of developing a true appreciation of motion pictures.

B. School News Reels and Public Relations

Probably a good many of the early production efforts of a school will concern themselves with recording student activities. These films may be used for various purposes. In some instances the newsreel is used to develop school spirit and inspire student cooperation in school activities. Occasionally, these films are made for purposes of publicity, and in some cases the films are filed as a historical record of activities carried on at the time of production. Newsreels and films of school publicity are usually presented before the student body as a whole, parent organizations, citizens' groups, or at commencement.

A few experiences in making newsreels have been summarized below.

Stenius, Arthur. "The High School Newsreel." *High School Journal.* 18:233-7. November 1935.

The newsreel at Detroit Western High School was introduced as an extension of the school newspaper. Those in charge believed that the newsreel could be intensely interesting to students. Adolescents like to see themselves and their friends on the screen. Admissions of five and ten cents could be charged and the venture made self-supporting. The athletic department saw the possibility of using it to stimulate interest in athletics, as well as to give an opportunity to show athletes the errors which

they made in their performances. It was believed that the innovation would be useful in stimulating interest in other school activities, such as club outings and class plays.

Since the motion-picture equipment of the school was obsolete, it was necessary to secure a 16 mm. projector as well as a camera. A used camera, films, and a new projector were secured for a little less than one hundred and fifty-five dollars.

The student in charge was an editor who had long indulged in photography as a hobby. The school bulletin board, with movable white letters on a black background, was used in making titles. The first reel made included a novelty introduction, scenes of the school, photographs of various members of the staff, the principal congratulating the editor and business manager of the paper on the accomplishment, scenes during football practice, shots of a tennis match, action pictures taken during a football game, and many shots of students about school.

The program for the first showing included the newsreel, a one-act play, and two reels of animated cartoons. A loud speaker system which a student had constructed was borrowed. Records were played for the animated cartoons and a member of the newspaper staff acted as commentator for the newsreel. At a later presentation the commentator sat near the front of the auditorium and used a megaphone. On one occasion a cheap speaking device and radio were used.

One newsreel was presented each month. The auditorium was filled for the showings and the venture was a paying one. The pictures taken were of good quality and the scenes sufficiently varied to maintain interest.

The school that takes up the newsreel is assuring itself of an activity that will receive increasing support from the student body. It is a practical extension of the service offered by the school newspaper.

Boos, Harold O. "The Motion Picture Camera in the School." *Sierra Educational News.* 30:17-18. October 1934.

The motion-picture projector has become quite common in the schools, but the camera is still unusual there. This should not be the case, for there are many uses to which the camera may be put to make for a more effective school.

The first experience with the camera at Cypress Elementary School, Orange County, California, was with the taking of shots

from a local ball game. This film was shown as a newsreel at one of the public school movie shows. Patrons and children were enthusiastic about it. The school now has many feet of basketball, baseball, and track scenes. Besides being useful as entertainment they are used in pointing out form used in the game.

Pictures taken during a fire drill showed the boys and girls just how the school acted. Ways of improving the drill were discovered.

Upper grade science classes had been studying house flies. During a field trip many breeding places of flies were found. These were photographed and later shown. The children saw that the fly problem was a practical one, and plans were made for eliminating sources of flies. The study of the mosquito was handled in the same way.

Another interesting reel was taken of a Mother Goose play which was produced by the second grade.

The school board purchased some land adjacent to the school grounds to be used for building purposes. Motion pictures were taken of this land as it was when it was bought, after it was first cleaned, and after it had been graded. When building starts, the process will be followed with the camera.

It is planned to take pictures of certain children who have difficult health problems. These will be taken from time to time, showing improvements as a remedial program is followed. Such a film should win converts in support of better health supervision in the schools.

Child, Eleanor D. and **Finch, Hardy R.** "We Have Made a Newsreel." *Connecticut Journal of Education.* 21:7-8. March 1937.

The fifty members of the Photoplay Club of the Greenwich (Connecticut) High School decided to produce their own newsreel. The necessary funds were raised by showing a rented film in the school auditorium and charging admission. Two months before the newsreel was actually photographed, the plans were made. The club members wrote to various sources of information concerning amateur movie photography, such as the National Board of Review and the Amateur Cinema League. They became "newsreel conscious" and studied issues of *March of Time* and other newsreels.

It was decided by the production committee that the usual activities of the school would be of most interest to the student body, therefore a list of possible activities was made and certain ones selected. The film was carefully planned, the various shots were diagrammed and footages calculated. The first scene presented the school fire drill; the second showed the school cafeteria; the principal was photographed speaking over the school public address system; other scenes showed the metal shop, work in the home economics laboratory, and so forth.

The scenes were taken on one school day so that the regular school program would not be interfered with, and the members of the club spent their study periods "on location." Arrangements were made in advance and equipment collected. This equipment included: a 16 mm. camera and tripod, a light meter, four reflectors on stands and four small clamp reflectors, seventeen 750-watt photoflood lights, three 100-ft. rolls of panchromatic film, three of supersensitive panchromatic, two 800-ft. reels, a splicing outfit, and miscellaneous articles such as double sockets and extension cords. The menu board from the cafeteria served as a title board. Six scenes were taken, consisting of from two to five shots each. During the next week, a few other shots were taken around the school, and titles averaging from three to five feet were made.

After the film was developed, a revised continuity was agreed upon. The scenes were practically all well photographed, so very little cutting had to be done. One of the students prepared a newsreel comment to accompany the showing of the film after it was finally edited and ready for presentation.

Keeler, Otis. "The High School Goes Hollywood." *Illinois Teacher.* 23:112. December 1934.

The problem involved was that of getting across to patrons of the school and to its alumni the importance of the high school and where it fitted into the scheme of education. Commencement provided an opportunity for this presentation, and previous commencements had dramatized the school in various ways.

A graduate student at Rose Polytechnic Institute in Terre Haute filmed high-school activities during the year in agriculture, home economics, and a student council discussion. The film was very successful in showing the public the value of the high school, and it may be used later for comparative purposes.

Apple, Joseph H. "Amateur Motion Pictures—an Aid to Effective School Publicity." *Educational Screen.* 8:186. June 1929.

School events since 1926 at Hood College (Frederick, Maryland) were filmed for the purpose of preserving them in convenient form, not only for use as publicity and propaganda but also for the personal enjoyment of students, faculty, alumni and others. Originally the school was given technical assistance by a professional worker, but later they handled the production independently.

The film first shows the school and campus as a visitor might see it, then depicts the work of the physical educational department, and finally presents pageants on graduation, May Day, and so forth. It is shown to incoming students, and to groups on request.

"Vocational Summary." *School Life.* 21:15. September 1935.

A unique feature was introduced into the commencement program of the Central Needle Trades School of New York City. Instead of the regular commencement address, arrangements were made to show several reels of motion pictures illustrating the activities carried on in connection with the courses offered by the school. The scenario of this film was carefully prepared with a view to comparing conditions during the early history of the school with present-day conditions. Activities in the school shops and in the classroom were featured in the films.

"Motion Pictures as a Means of Educational Interpretation." *Journal of the N.E.A.* 25:233. October 1936.

A movie of school life and activities was made last year at Saginaw (Michigan) High School. From the first day of school through the spring activities, more than 1500 students and teachers were photographed in classroom, at athletic events, at gym, school parties, meetings of student organizations and in office scenes. Faculty members cooperated in rehearsing, directing, and preparing the script. By means of an amplifying system, the production was made to resemble a talking picture. The result—an hour and three quarters motion picture, *What You Missed*—gives a complete picture of high-school life. The movie was shown two nights, and the large school auditorium

was inadequate to accommodate the number of people desiring to see it. This film will be invaluable, not only as an interpretive medium, but as a historical record of the year's activities.

Kling, Evelyn Lovett (Public Schools, Atlanta, Georgia) "The Use of Visual Aids in Teaching History and Geography: An Illustration." *Educational Screen.* 14:200. September 1935.

A fifth grade geography class studying ancient Greece developed a play based on the Euripides version of "Iphigenia in Aulis." The words of the play, poems, and dances were prepared by the children. For purposes of record, a motion picture was made of the dramatization.

Schoenhof, Madeleine T. (Teacher, Anne Hutchinson School, N.Y.C.) "A Continuous Visual Program." *Progressive Education.* 13:463. October 1936.

The Anne Hutchinson School is made up of 2,400 children with a median I.Q. for the school of 85. The construction of the Federal Hillside Housing Project directly opposite the school building led to the development of an intensive activity program over a period of several semesters. During the first term the school children were interested in the construction work. They investigated the uses of cement, sand, bricks, tiles, plaster, paint, lumber, lathes, cement mixers, hods, and other materials. Fathers visited the school and answered the children's queries regarding the different kinds of jobs. Unions, guilds, apprenticed workers, and master workmen were distinguished and analyzed. A study of wages and family expenditures brought out interesting facts. Each class became some particular type of worker. When practical, the "painters" beautified some of the school furniture, the "iron workers" fixed a spindle on a stairway. Songs and plays were composed based on the activity of building construction.

The next semester, when the building accommodating 5,000 people had been completed, the students received permission to use a four-room-and-bath apartment to furnish and occupy for one month. The preparations for furnishing the apartment took sixteen weeks, and one month was allotted for being "at home" in it.

The furnished home was open for inspection by the children during the day and by parents at night. In groups of four or five at a time, the children "lived" in their home for short periods. After a month the apartment was dismantled for occupancy by a tenant.

A record of these activities has been made on a 400-foot reel of film.

Bragdon, Clifford. "Movies in the High School." *English Journal.* 26:374-80. May 1937.

One of the activities of the Photoplay Club of the Hawken School, Cleveland, Ohio was taking newsreels of school events, Several hundred feet of such newsreels have been edited.

This experience has not been entirely satisfactory, but it has taught the boys several important techniques, for instance, why it is well to have the director as editor, and the difference between motion in a picture and a mere picture of motion. This sort of thing is laboratory learning.

Kuckuk, H. M. "Technical High School Film in Color." *Educational Screen.* 15:258. October 1936.

The Boys' Technical High School, Milwaukee, used a color film, made in the school, as a part of its graduating exercises. The film, "From Drawing to Drilling," brought to parents the operations as they were carried on by their sons in the shops of the machinists' division of the school. Short explanations by students preceded the various portions of the film. The color no doubt added glamour to the scenes presented, and the slight sacrifice of detail due to the necessity for using large stops for color was unimportant under the circumstances. The picture was filmed with a camera presented by the graduates as a parting gift to the institution.

C. Amateur Films as an Instructional Aid

In some schools, analysis of available motion pictures for instruction revealed them to be inadequate. Teachers and students cooperatively, or independently, have been known to undertake the production of teaching films to serve specific ends. Such an activity is valuable to those cooperating and

to those subsequently using the films for purposes of reference.

The most extensive program of independent film production is noted in the Milwaukee Vocational School, whose activities have been summarized here. Freeman reports the successful use of amateur films to supplement instruction in an evening class of adults. Financial assistance was secured in this instance through selected industrial concerns. The Massachusetts Institute of Technology, the University of Iowa, and Teachers College, Columbia University, respectively, have used independent motion pictures as aids to certain areas of instruction.

A pioneer effort in film production for "propaganda" purposes is revealed in the report of the film made in a Seattle High School to illustrate health precautions to be observed during the summer months. The news items of safety education campaigns in Muskegon County, Michigan and Tulsa, Oklahoma indicate another successful use of films for teaching a lesson.

Kruse, William F. "How One School Makes Its Own Teaching Films." *Educational Screen.* 10:109-10. April 1931.

The Milwaukee Vocational School with an enrollment of 15,000 pupils, had to produce its teaching films for its own particular needs. Its junior high school includes boys and girls 14 to 16 years old, attending school for half-days, and out working the rest of the time. The senior school includes boys and girls of 16 to 18 years, who attend school only one full day per week. The student body is never the same on any two successive days. At the same time, there is a need for training in specific trades and skills, although only one-half to one-quarter of the usual school time can be devoted both to these specific trades and to the cultural background.

A department of visual instruction was organized, with four teachers and one assistant. Each teacher produces a 600-ft. 16 mm. film every two weeks, to fit his section of a pre-deter-

mined curriculum. Each week, two films are produced on biology, personal problems, general science, and safety.

Equipment includes a Bell and Howell Filmo 70 DA, with various lenses, three projectors, and lighting equipment totalling 16,500 watts. The school cost is less than $200 per reel, where a commercial estimate for the same job would be $2500 to $3000.

Developing, printing, animation, titles, and photography are done at the school. Films are produced only for school use. Thus far, films have been produced on the Business of Living, Flowers, Birds, Bees, Heat, Light, Gas, Liquids, Solids, Fire, Pedestrian Safety, First Aid, Industrial Safety, Posture, and Money.

Freeman, G. L. "Visual Aids in Adult Education." *Educational Screen.* 16:9-10. January 1937.

The instructor of an evening college class at Northwestern University, whose members were too tired to listen to straight lectures each evening, realized the need for using visual aids. Available commercial films were found to be unsuited to the age level and subject matter. Consequently, the students and instructor undertook to produce a series of 16 mm. sound films to illustrate the topic of each weekly lecture and to serve as a basis for further class discussion.

The films are generally shown early in the lecture hour for their interest value and because of questions which they will raise in the minds of the audience. The instructor then clarifies some of the questions and proposes new ones. Often the film is re-run near the end of the hour, the class having been told to look for certain special items. When the film presents an actual experiment, the data are copied from the screen upon mimeographed forms and detailed results worked out for later presentation.

One method of financing the production of these films has been through selected industrial concerns.

"Another Release in College Series." *Educational Screen.* 14: 128. May 1935.

A new film, *The Graphic Representation of Machine Operations,* has just been completed by the Division of Visual Education of the Massachusetts Institute of Technology. A machine

drawing is first shown. Then all operations called for in the drawing are shown, including drilling, tapping, boring, counterboring and countersinking. Lathe and hand work are depicted, as well as the operations of planer and gear cutter, and external and internal thread cutting.

Three motion pictures which presented in visual animated form the behavior of an electric wave as it travels through a 250-mile transmission line were previously released by this division.

Barnes, Ralph M. "Motion Pictures for Teaching Special Courses to Engineering Students." *Educational Screen.* 13: 70. March 1934.

In order to study the methods and organization of manufacturing enterprises, engineering students at the University of Iowa are given instruction and practice in making motion pictures of typical operations in shops and offices. Photography is carried on in the Motion Study Laboratory. After the films have been made and processed, the students analyze them and work out better methods for performing the operation.

Katz, Elias. "On the Cost of Instructional Films." *Progressive Education.* 13:459. October 1936.

A professor of fine arts in a teachers' college wished to produce a film for clarifying art concepts, for showing to art teachers, and for use in art classes in junior and senior high schools. Filming of the subject took one afternoon, and the total cost was less than twenty-five dollars.

The author believes that simple instructional films can be easily and inexpensively made by the amateur.

Rarig, Arthur. "How a High School Produced an Educational Movie." *Educational Screen.* 7:269. December 1928.

The Health Committee of the Roosevelt High School in Seattle decided to make its own film on health, since the long summer vacation was approaching and certain warnings were needed for the safety of the students. Those who remained at the shore must learn to handle a canoe or row a boat safely, to wait an hour after eating before going in swimming, never to drink doubtful water, to recognize poison ivy, to realize that

sudden and prolonged sunburn is dangerous and that life saving and first aid should be familiar to everyone.

English teachers prepared a scenario with titles; the teacher of dramatic expression became the dramatic director; the art teacher attended to make-up, and the girls' gym teacher (an amateur film fan) did the filming. The actual photographing was done one Saturday in May, at a summer camp ground. The film was called *What Price Folly?* Lettering for the titles was done by a manual training student, and the splicing by the teacher who took the film. The expense was borne by the Boys and Girls Club of the school.

A synopsis of the story is included.

Elliott, Paul A. "Rural School Children Produce Movie; Lessons in Safety Illustrated by Boys and Girls of Muskegon County." *Michigan Educational Journal.* 9:894. January 1932.

This film on safety in traffic was directed by W. J. Berichon, the county traffic officer. School children, teachers and neighbors cooperated to make the film a success. It consisted of 500 feet of 16 mm. film and cost less than one hundred dollars. The motion picture illustrates the right and wrong ways of conducting oneself on the highways and in autos.

"**Safety** Education Brings Results." *Journal of the N.E.A.* 24: 307. December 1935.

Tulsa, Oklahoma schools will use motion pictures this year in attempting to repeat the record of last year, when not a Tulsa child was killed by an automobile accident. Movies showing traffic hazards and children crossing the street are taken at each school. There will also be pictures of students crossing the streets in the safest manner. Children will be given lectures in these methods when the films are shown.

II. Techniques of Production

Having selected his area of production, the amateur film producer is at once faced with a number of technical problems. In order to meet this need for technical information the *Educational Screen* presents a monthly column by F. W.

Davis of Ohio State University on "Film Production in the Educational Field." Abstracts of the monthly issues of this column from January 1936 to January 1937, inclusive, are included herewith. They will be found to give in compact form a great many helpful suggestions regarding the mechanics of motion-picture equipment, lighting, editing, titling, planning, directing, constructing the scenario, and the like. Each month the column deals rather thoroughly with a specific topic, such as projectors, lenses, film storage, color film, etc.

Davis, F. W. "Film Production in the Educational Field." *Educational Screen.* 15, 16. January 1936 through January 1937.

January 1936. Films prepared by authorities and by industrial concerns have in some cases been too general to be of maximum service for certain types of classroom use. To meet this objection there is a growing interest in the production of instructional films by educational institutions. Such films should become a very important and valuable part of our present educational system.

Production of satisfactory films is not simple. Satisfactory production involves many factors with which one should become familiar before attempting such work. Prospective producers must know the mechanics of motion-picture equipment, types of lighting, editing, and how to select titles. It is also important to be familiar with planning, directing, arranging the proper sequences, building the scenario, acting, and problems of this sort.

February 1936. One of the major types of educational film is that which shows a continuous process of some sort. The construction and manipulation of a puppet show, the steps involved in getting a water supply, and the clinical diagnosis and treatment of a disease are examples of this type of subject. The subject will, obviously, be one in which the process is of prime importance. The film should have sufficient continuity so that when it is run off without pause the student will have a well-rounded conception of the entire process illustrated. The photographic technique is also of great importance.

One of the major considerations in picture making is the quantity of light. Even with large-dimension lenses and fast films good light in sufficient quantities is needed. The idea that the diaphragm is primarily for the purpose of regulating the amount of light is erroneous. When aperture is reduced the focus is much sharper than when it is large. The light should be adjusted to the aperture opening rather than altering the diaphragm to suit the intensity of the light.

March 1936. (Camera Equipment). The type of equipment to buy for school use is an important problem. Only the best and most versatile cameras should be used to make teaching films. The initial cost of the equipment is small compared to the cost of the film which will eventually be consumed in the production of films. Nothing is more exasperating than to find that after using a certain camera for a while it has definite limitations which prohibit it from being used at maximum efficiency.

Another consideration is the type of lens to purchase. The size of the image obtained on a film is directly proportional to the focal length of the lens. A good combination for a modest outlay would be a 1″ lens and a 2″ lens. A more desirable combination would be a 15 mm., a 1″, a 2″, and a 4″. The lower the "F" value the larger the effective area of the lens and the greater the amount of light admitted. The 1″ F 1.9 lens is standard equipment on most cameras. The 15 mm., or wide angle lens for the inclusion of large areas, can be had in the F 2.5 model, a very satisfactory lens. The 2″ lens may be obtained F 1.5 but the F 3.5 model gives sharper images if the speed may be sacrificed. In the 3″, 4″, and 6″ lenses for outdoor work and limited indoor work the apertures rarely go below F 4 or F 4.5.

By all means purchase a variable speed camera. This will make possible the taking of "slow movies" which are very valuable in certain types of work. For this purpose the picture is taken at 32 or 64 frames per second. If you want to add a sound track the picture must be taken at 24 instead of the usual 16 frames per second. It should be remembered that at the higher speeds much more film is consumed.

April 1936. (Projection Equipment) In purchasing a projector one should buy only a high grade machine of sufficient power for the use to which it will be placed. One should never purchase less than a 500 watt size for school use. A larger bulb may be advisable because, (1) Greater power will enable

one to have sufficient light for dark prints or to accommodate the occasional large group, and (2) If the machine has a variable resistance and voltmeter the life of the bulb can be materially increased by using it at less than the prescribed voltage.

For most school use the standard 2" lens is satisfactory. For projection distances of 50 to 100 foot it is necessary to use a 3" or 4" lens.

A power rewind saves many valuable minutes in rewinding films.

The ease of threading the machine is important.

A small pilot light is a distinct advantage.

The aperture plate should be easily accessible and so constructed that it can be readily cleaned.

May 1936. (Film and Exposures) The length of the film will depend on the subject to be treated. Enough footage should be taken to allow for cutting and editing. In the average film one takes about 30 per cent more footage than is used.

The type of film to use is always a question. For exterior photography by sunlight the cheaper orthochromatic type is perfectly satisfactory. When sunlight is used one may use a comparatively slow film and still have plenty of leeway in speed. If an interior set is to be photographed only the highest speed panchromatic film should be used. A safe rule to follow is to have more speed than necessary in a film rather than to be on the margin.

Exposure meters should be used to get the correct exposure of film. Either the photoelectric cell type, or the type where the operator looks through the meter and estimates the exposure by visual methods will give good results if properly handled. You must become perfectly familiar with the particular type of meter being used, and then use common sense in interpreting the results.

Tripod support is very necessary. Get a model constructed heavily enough to give a firm support for the camera. It should possess a tilting and panoramic head with an efficient locking device.

June 1936. (Errors in Film Production) The most common errors in the production of films are:—

1. Underexposure, resulting in films so dark that the picture cannot be seen clearly.
2. Out of focus or slightly blurred pictures due to incorrect measurement of the distance from camera to subject.

3. Overexposure, resulting in pictures that are thin and washed out, with very little detail.
4. The omission of close-ups or enlarged sections, resulting in monotony and loss of interest.
5. Unsteady pictures, resulting from trying to hold the camera in the hand or from using a poor camera.
6. Weak titles, or failure to make titles concise and full of valuable data.
7. Faulty lighting, or faulty exposure for the lighting at hand. The better films are lighted very brilliantly and the lens stopped down to compensate for the intensity.
8. Other weaknesses are: subject matter unsuitable for the medium of the picture, and improper length of film. Some films would be improved by cutting, others need more footage per scene and more explanatory scenes.

October 1936. (School Production Program) One way to secure teachers trained in picture taking is to have an educational program in the high school. The high school pupil will derive much pleasure from taking pictures of his associates. He may develop a technique for illustrating his school reports. Photography makes a worth while leisure time hobby.

The school as well as the pupils will benefit from such a program. Pupils may make lantern slides, eventually building up a very useful library. The pictures for the school annual could very well be taken by interested pupils. There is no reason why movies of school activities could not be taken. If such films were exchanged between schools they would give each school an excellent opportunity to find out what other schools are doing.

The question of the cost of such a program arises. Equipment need not be expensive. If the equipment is carefully selected by a competent person it could be one of the least expensive of school activities.

November 1936. (Color Film) Considerable caution should be exercised in the use of color film. A determining factor should be whether color will be a worthwhile addition to the picture. In order to produce a good color film one must not only understand the correct exposure, development, manipulation of the camera, lighting, and composition, but one must also have a knowledge of color and color harmony.

One should become proficient in using the easier black and white and then, but not until then, try color film. For the first few productions try just one or two sequences in color and the rest in black and white, as many films are produced in this manner.

Color film costs about 20 per cent more than black and white. At the present time it is impossible to make duplicate color prints. The projection of color films requires greater brilliancy of illumination.

December 1936. (Sound Film) Sound films may be produced by one of three general methods. One is to record the image and sound directly on 16 mm. film. Another is to record the image and sound on 35 mm. stock and later through optical reduction to transfer it to 16 mm. size. Still another is to record the image on 16 mm. film and later record the sound on 35 mm. film, then reducing it to 16 mm. and synchronizing the two. Experience has proven that the latter two methods are more desirable from a quality standpoint. Unfortunately, these methods are expensive.

In sound recording the pictures are taken at 24 frames per second instead of at 16 frames as in silent pictures. Since the film passes the lens more rapidly, more light is needed. This is a practical problem which must be faced. Furthermore the cost of the film will be increased 50 per cent.

Rather definite acoustical problems must be solved. Actors must also be trained to act naturally as well as to speak into a microphone.

Possibly the most satisfactory method of producing 16 mm. sound films at minimum expenditure is to take the 16 mm. picture in the normal manner but at 24 frames per second, and then after the film is completed have a recording laboratory take care of the sound angle.

January 1937. (Storage and Preservation) Storage of motion pictures evokes the problem of fire hazard. They may be produced on Cellulose Nitrate Film which burns at 230° F., and if insufficient air is present while burning, gives off dangerous gases, or on Cellulose Acetate Film which is about as flammable as ordinary paper. All 16 mm. films in this country and some 35 mm. films are of the non-inflammable type.

In order to prevent films from curling and becoming brittle, proper humidity is necessary. A relative humidity of 50 per cent

is ideal. Too much water vapor and the resulting condensation of moisture on the films is also harmful. Films should be placed in individual metal containers which contain an absorption pad, kept continuously moist.

Brittle films may be restored to their original condition by replacing the moisture content. By a special rehumidification process this may be done in ten to thirty minutes. Otherwise it may require several weeks for them to come back to their original condition.

Maintenance of proper temperature is important. With proper humidity, a temperature of from 50° to 70° F. is satisfactory.

In addition to the technical suggestions given in Davis' column the following articles contain further hints as to desirable equipment and effective methods of handling it. Gramet emphasizes planning and arrangement but also discusses equipment and gives suggestions concerning editing and titling. Lewis and Deady's article describes correct techniques in the use of equipment and also makes a number of general suggestions.

Gramet, Charles A. "Making an Educational Movie." *Educational Screen.* 13:5, 40-1. January, February 1934.

Many commercial pictures are not of the type best suited to classroom use. It is the belief of the author that the capable, experienced teacher, with an interest and some ability in picture making, can make a definitely worthwhile contribution by making films.

Planning a motion-picture lesson is very much like planning any other lesson. The topic must first be chosen. The topic is only suitable for a motion-picture lesson when a motion picture will serve better than any other type of presentation.

The film materials must be so arranged as to stimulate interest in the lesson itself. The ideas that are to be presented in the lesson should be selected and the film planned around these, with no extraneous material included. Many films include too much. The selection of the material will depend upon the purpose for which the film is to be used. More material can be included in

a film designed for review purposes than for one planned for presentation of new material. The film lesson should conclude with a generalization, review, or application.

The film continuity should be very carefully planned and followed. Shots need not be taken in the order in which they are to appear in the finished film, since the order can be cared for in editing and cutting.

The plans must be made according to the equipment available, and one should study to make the best possible use of his equipment. It is difficult to determine the minimum amount of equipment necessary. The following minimum list should make satisfactory results possible.

1. A 16 mm. camera with a reliable spring motor and shutter. A film capacity of 100 ft. is essential.
2. A tripod is necessary in order that the camera be held stationary.
3. Adequate sources of light are needed. The new photo-flood lamps are very satisfactory. However, 500 watt projection-type lamps will prove economical in the long run.
4. A suitable lens should be used.
5. A photometer is essential.
6. A good steel tape is cheap and reliable for measuring distances.

The picture should be so planned that if the projector were stopped at any instant the picture would be pleasing. The interest in each scene should be centralized and not scattered. There should be proper balance. Unity is necessary. Everything in the picture or scene should contribute to the idea that is to be conveyed.

If children are included, little attention need be given to make-up. Select children of intelligence, free from distracting defects. Stilted and artificial acting should be avoided.

Rehearse the scene as often as necessary, then take. Take more footage than necessary, to allow for cutting. It may not be necessary to take the entire scene; include the beginning and the end. The length of shots is very elastic, not less than four or five feet per shot sometimes being recommended.

Most amateurs use reversible film. The author prefers negative film. Though somewhat more expensive, the results are better.

Proper editing is important. The author prefers to project the positive on the screen to see the action rather than use a viewer. He cuts the negative of the film as he views it, cutting out parts that will be omitted. The parts to be used are spliced together in the desired order. The film is then projected and again revised, perhaps some scenes are retaken The film is then run through without interruption. Notes are taken and any further changes made that seem necessary.

The film is now ready for titling, which may be done by the amateur or commercially made. Commercially made titles are not very expensive and are time-saving.

The language of the titles should be checked against word lists for difficulty. Titles should be relatively short, pointed, suggestive, and challenging. The number of titles should be limited. The film must be a picture of things, processes, and activity, not words. Twenty-five per cent of the film given to titles should prove adequate. About one-half second per word is sufficient time to allow.

The estimated cost of making a reel of film is from $50 to $100. It may be argued that films could be purchased for less money. The primary interest, however, should be not in reducing cost, but in improving teaching films. A good picture will yield many prints, thus reducing the cost per copy.

Teachers should not refrain from making pictures for fear that sound pictures will make their work obsolete. It has not been demonstrated that sound is a necessary part of most teaching films. Where sound is essential in conveying the idea or forming the concept, it is an improvement in methodology to use it. The teacher can refrain from using that type of subject. When the author becomes convinced that a lecture is a necessary part of the film, he will employ a commercial company to attach the necessary sound to his film. Sound should not deter teachers from making good teaching films.

Lewis, Alexander B. and **Deady, John A.** "Produce Your Own Movies: Plan for a High School Photoplay Club." *Scholastic.* 29:15. November 21, 1936.

The authors point out that members of the high-school photoplay club are able to write, act, produce and exhibit films. The school movie club can: (1) assist in the visual education program of the school, (2) develop appreciation of motion pictures,

(3) complete the production of films. The present article is concerned only with the last phase.

The first problem in production is the basic equipment—camera and projector. The authors recommend purchasing a sound projector. Equipment can be paid for by putting on special benefit showings of the club's early productions. Two shows each month should yield money for the equipment fund. In buying a camera, it is advisable to secure one which can make trick titles, produce dissolves, fades, and so forth.

Correct use of equipment can be learned either by formal instruction or by informal experimental handling. An exposure meter should be used. Some useful accessories, such as a movable dolly for moving camera shots, a fade-out device, series parallel floodlight switches, reflectors, titling boards and the like can be built by students in the school shops.

The operation of a movie camera is best explained by the use of a still camera. Lenses, focal distances, color filters tie in with optics of physics; film development ties in with chemistry. Many other correlations are possible. Good pictorial composition, best scene lengths, camera angles, tempo and the like are based on planning, experience and instruction.

With respect to lenses, a 1-inch fast lens (either F 2.8 or F 3.6) should be used for interiors and color work; a 3-inch telephoto lens for outdoor games; and a wide-angle lens for close classroom shots. For lights, the minimum equipment consists of two mogul photofloods, two broad spotlights, one spotlight, and two reflector sets. Titles may be easily made on titling boards, either hand lettered or using removable letters. The authors point out dangers from mishandling equipment.

They also recommend affiliation with the Amateur Cinema League, and reading of their organ, "Movie Makers," as well as affiliation with 4-Star Clubs of the National Board of Review of Motion Pictures.

A film production program might include "a film made as a civic enterprise, a film produced in cooperation with a large department store to emphasize vocational guidance, a film showing library usages, a film on safe driving and walking, made in conjunction with the motor vehicle bureau. The club might make pictures on biology, art, sewing, shop work, commercial subject techniques, literature, mathematics, sports techniques—in fact, on any subject related to school life."

In producing their own films, students go through an experience with rich vocational possibilities. Aptitudes and skills are developed which may influence choice of vocation. Girls usually prefer photography and film criticism to acting in the films. Boys excel in technical work; girls in editing, splicing, and constructing productions. The opportunities to design sets and costumes, to prepare stories and to write scripts, to act, or to use the microphone appeal to many students as an incentive for joining the club.

The following group of articles deals not so much with the mechanical aspects of production as with technical planning. Space points out the importance of planning and organization, and gives certain suggestions regarding the making of sets and the preparation of a scenario. Gramet urges amateur producers to study the techniques of the theatrical film. Although Johnson's article deals with still pictures rather than films, his discussion of the reasons for taking the picture, the use of the finished picture, and the importance of interest appeal is also pertinent to film production in the school. He suggests that teachers cooperate with professional photographers in planning pictures. Hadley's article contains an appeal for teacher-made pictures.

Space, Kenneth F. "Amateur-Group Film Producing with Economy." *Journal of Educational Sociology.* 10:172-6. November 1936.

Most of the unexpected pitfalls usually encountered in amateur motion-picture production can be avoided by careful planning and systematic procedure. The group expecting to make a film should not consider the task too easy and thus fail through the unwillingness of the individuals to make the necessary sacrifices of time and money after the novelty has worn off. Nor should the task be considered too difficult, since one should expect to have fun and enjoyment while making a picture.

Let us assume that a group decides to make a picture and looks for a story to film. The group should first be organized, giving special consideration to the interests and capacities of

the various individuals. The fundamental divisions of a photoplay-producing group are directorial, photographic, electrical, property, and clerical.

Next, a play or plot must be selected. Comedies and mystery thrillers are usually not successful when done by amateurs. A simple plot should be chosen. To make the problem less complicated, it is probably best to limit the first film to 400 feet. The story should serve a socially useful purpose. If imagination is brought to bear, this will not mean a dry and uninteresting plot.

After writing the story in scenario form it should be broken up and a script book made. This will include all details concerning the filming of the picture, such as costuming, length of shot, etc. The script clerk should be able to find the answer to any question concerning the production in a few seconds.

It is better to use amateur players than to waste much time and money in hiring semi-professional actors. Select stories to fit the types and ages of your group. Unless very carefully applied, make-up is almost always detectable.

Instead of artificial sets, use real ones as much as possible. If the play calls for a tenement setting, a social service agency can find one which the tenants will be glad to let the group use for a few dollars.

If a photocell exposure meter is used one cannot miss on the score of exposure. Fast lens and supersensitive film save money in lighting equipment, bulbs, and current. Satisfactory lighting can be secured by the use of rather simple lighting equipment, as by using a No. 4 photoflood bulb and a few simple and inexpensive reflectors.

Each scene should be rehearsed four or five times, then filmed two or three times at the most, and in most cases good results will be secured. Filming each scene twice is less expensive than going back for retakes, as might be necessary had the scene only been taken once.

Gramet, Charles A. "The Non-Commercial Teaching Film." *Progressive Education.* 13:454-5. October 1936.

Teachers who make their own films will increase their own effectiveness in using films in teaching. Poor technical jobs, however, should not be tolerated, since it is not difficult to master the basic technical aspects of filming.

The author urges educational film makers to study theatrical films. From them can be learned the secret of interest, continuity, close ups, and how scenes are "short enough to be interesting and long enough to cover the subject." Student organizations in schools could well invest funds in such work. Teachers who are interested in film making should be encouraged and even subsidized.

Johnson, Laurence B. "What Makes A Good Picture." *Educational Screen.* 13:152-3. June 1934.

This article is not concerned with the use of pictures in teaching the child, but with their use in getting the public to know and appreciate the school. The chief concern is with the picture taken in the school. As the school gains in freedom, as pupils more and more learn by doing, schools lend themselves better to picture-making.

Still pictures are attempts to concentrate into one instant what has been done over days and weeks and months of effort in the classroom. To accomplish this much thought must be given to what one is trying to do and how he is going to do it.

The first step is to decide why the picture is being taken. If the purpose is to tell a story or project an idea, the faces of specific children do not matter. The object then is to arrange that picture which best tells the story.

The second matter for consideration in connection with a picture is its use. If it is not planned to reproduce it, one finish, a soft one, may be most desirable. For reproduction a glossy print will be needed. If it is to be reduced in size, simplicity and sharp contrasts take on great importance.

The third consideration is the interest appeal. This involves selection of a person or thing that is interesting. Pictures should treat of timely incidents. If pictures of a school activity are being taken and one wants the public to be interested in it, take the picture before the event, not after it is over. Another vital factor is to have those in the picture doing something. A photograph of someone doing something has a one hundred per cent better chance of catching the eye and the interest than a mere picture of faces. Finally, do not hesitate to add to the picture, if necessary, something that will be definitely interest-building. The photograph of a teacher about to retire after thirty-five years of service will not be nearly as interesting as

one which shows her with her first pupil on one side and her youngest pupil on the other.

Should the teacher take the pictures or should a photographer be employed? It is unlikely that the teacher can take pictures good enough for the public. The professional photographer has the equipment, background, and training to fit him for the task. Not every photographer will do satisfactory work. He should know what a news picture is, what a good picture is, and how to work with teachers and pupils to get best results.

The teacher might make all the plans and expect the photographer to follow them. Or she may expect the photographer to do all of the planning. Neither method will get the best results. Best results will be obtained by cooperative effort. The teacher should explain to the photographer what she wants, and in return receive the best thought of the photographer in making the picture.

An editor welcomes good pictures. They break up those vast dreary expanses of type. They actually save space, telling quickly and dramatically the story that would take many words.

Hadley, Allan M. "The Value of a Camera in the Hands of the Teacher." *Educational Screen.* 13:192. September 1934.

The author refers to the use of a still camera, but the educational values are similarly applicable to the motion-picture camera. Most teachers agree that pictures are valuable. But there is one drawback to the use of these aids—the pictures were not taken by the teacher using them. When the teacher can say, "As I took this picture I was particularly impressed by . . . etc.," the picture takes on a new value to the pupils and carries its point with much greater ease and effectiveness.

The teacher will object that he does not travel and could not get worth while pictures, and that he does not know anything about a camera and couldn't take pictures that would be good enough to use in the classroom. Without doubt he will discover that he travels more widely than his pupils. Furthermore, many valuable lessons can be taught with local materials in picture form.

With a little study and practice, anyone can make good pictures. Cameras are simple to operate and films have been greatly improved in recent years. There need be no great out-

lay of money for the original equipment, but when the teacher recognizes the value of this aid he will want eventually to purchase a more expensive and more versatile instrument.

The neophyte will not secure 100 per cent results. If 50 per cent of the pictures are usable he should feel satisfied. "Practice makes perfect" is a motto that it is well to keep in mind when beginning this work.

Part Five

EXPERIMENTAL RESEARCH IN INSTRUCTIONAL FILMS

BY

CHARLES F. HOBAN, JR.

EXPERIMENTAL RESEARCH IN INSTRUCTIONAL FILMS

Introduction

Experimental study of the motion picture in classroom instruction began shortly after 1915. Among the first experiments reported was that of David Sumstine, published in *School and Society* in 1918. Whatever limitations this investigation may reveal in the light of more recent teaching techniques and experimental methods, it was, nevertheless, a beginning of experimental study of the rôle of the motion picture in instruction.

Within the six years following the publication of Sumstine's study and culminating in the publication of the University of Chicago study in visual education in 1924, research developed rapidly. The general problem attacked was the instructional function of the motion picture in relation to (a) other visual aids such as slides, demonstrations, maps, and the like, and (b) the more traditional classroom procedures utilizing purely verbal instruction by means of textbooks, supplementary reading, and so on.

Among the pioneers in this phase of experimentation were the late Joseph J. Weber, F. Dean McClusky, and Frank N. Freeman. Weber devoted himself largely to the attempt to discover the relative values of the motion picture, the slide, and the diagram accompanied by verbal instruction, in the development of informational learning. McClusky's investigation was more extensive in pupil population, range of subject matter, and increased variation of the technique of motion-picture use. While his general problem was much the same as Weber's, McClusky introduced a broadened conception of motion-picture technique, varying the number of

projections and the kind and amount of verbal accompaniment.

Freeman's early contribution was directive, experimental, and editorial. He directed the research undertaken at the University of Chicago under a grant of $18,000 from the Commonwealth Fund, conducted some of the experimental studies, and edited the published report of the investigation. Thirteen studies were reported dealing with the comparison of various modes of presentation of motion pictures with other visual and nonvisual methods of instruction in a wide variety of subjects of the curriculum.

The University of Chicago studies were intended to define in broad general terms the functions of the motion picture in instruction. Its superiority over other visual aids was determined to be the depiction of motion, and its place in the instructional procedure those learning situations in which "it is essential to grasp the nature of movement." [1] Freeman also postulated a second function, less clearly evident at that time from experimental data, as the arousal of interest and the sustenance of attention. He pointed out the need for further experimentation to establish this function.

With functions of the motion picture in education thus broadly defined, experimentation from 1924 to 1930 was extended to the problem of the contribution of the motion picture in arousing various types of pupil reactions, particularly in the social studies. Wood and Freeman undertook an extensive investigation under a grant from the Eastman Kodak Company to determine the contribution of the motion picture, when used as an integral part of classroom teaching procedure, in (a) motivating greater pupil activity in relation to the subject studied, (b) increasing factual learning, (c)

[1] Frank N. Freeman. *Visual Education: A Comparative Study of Motion Pictures and Other Methods of Instruction.* The University of Chicago Press. 1924. p. 74.

improving descriptive processes, and (d) promoting understanding of causes, effects, and relationships.

At approximately the same time, Knowlton and Tilton were investigating the functions of the *Yale Chronicles of America* photoplays in (a) motivating greater pupil activity and classroom participation; (b) increasing knowledge of historical chronology, historical geography, historical personages, and interaction of events, causal relationships, and interrelationships other than time; and (c) increasing permanency of learning in these various aspects. Whereas the Wood and Freeman investigation was extensive, the Knowlton and Tilton investigation was intensive, and whereas Wood and Freeman secured their measures of motivating influence of films from reports of cooperating teachers, Knowlton and Tilton devised methods of securing quantitative data on this problem. Regardless of the measures employed, the results of the two investigations on the problem of motivation were in essential agreement.

In England during this same period Consitt was at work. Abandoning as too limited in its possibilities the objective method of measuring results of instruction, she secured reports from a large number of teachers and pupils throughout England on (a) the values accruing to the use of the motion picture in instruction, (b) its adaptability to various age and grade levels, (c) the nature of pupil responses, and (d) technical imperfections of available motion pictures.

The experimental studies of the 1924-30 period differed from those reported prior to 1925 in that:

(a) The motion pictures which were used for experimental evaluation were specifically constructed for instructional purposes, while those previously used were in many cases films produced by industrial concerns for indirect advertising purposes.

(b) The instructional periods were of sufficient length to permit organized use of several films and the accumulation of reliable results.

(c) The motion pictures were used as an integral part of the instructional procedure in addition to the traditional media and procedures of instruction.

(d) Wider sampling was made of pupil population, teachers, age-grade, and mental-ability levels.

(e) Learning outcomes were more finely differentiated and more accurately measured.

(f) Indirect outcomes, such as greater classroom participation, increased voluntary reading, etc., were studied.

(g) Permanent as well as immediate results of motion picture instruction were investigated.

(h) Comparative effectiveness of motion-picture instruction with various age-grade and mental-ability levels was measured.

(i) Objective measures were supplemented by reports of teachers and pupils on their experiences with the instructional motion pictures.

Up to 1930, however, research was limited to the use of the silent films. Meanwhile, sound accompaniment had been added to motion pictures. During the past six years the general trend of experimental research has been in the direction of (a) the effectiveness of sound motion pictures in informational learning and the development of thinking in various subject-matter areas, (b) the relative effectiveness of various methods of verbal accompaniment to motion pictures, and (c) the effectiveness of both sound and silent motion pictures with large and small classes. Arnspiger and Rulon investigated the effectiveness of sound pictures produced for and used with definite units of instruction. Clark, Westfall, and Einbecker evaluated the effectiveness of various methods of verbal accompaniment to films. The problem of

the effectiveness of motion pictures with large and small groups of pupils was investigated by Stoddard, who compared sound motion pictures in auditorium showings with traditional nonvisual methods in the classroom, and by Knowlton and Tilton, who compared the auditorium and classroom use of silent films.

Characteristic research developments of this most recent experimental investigation are: (a) extended investigation of problems previously isolated; (b) use of sound motion pictures in experimental classes; (c) greater correlation and integration of motion pictures with the curriculum; (d) more intensive study of smaller and better controlled experimental groups.

During this same period a series of studies on the social influences of the motion picture, including a study of learning in the theatrical situation, was carried on under the direction of W. W. Charters, of Ohio State University. These studies were subsidized by the Payne Fund and are generally known as the Payne Studies.[2] Because they deal with the theatrical film apart from the purely "instructional" film, treatment of these studies is omitted from this discussion. By their implication these studies are, however, of great instructional significance, and in the broad sense of the word treat directly the "educational" influence of the motion picture.

In this review of trends since 1915 in instructional motion-picture research, reference has been made only to the major published studies, most of which were subsidized by some agency interested in the use of films in education. During the entire period many smaller and more restricted investigations were carried on independently, generally by graduate students in partial fulfillment of requirements for advanced degrees. The result of this independent research has been, in general, the extension of data on problems

[2] Charters, W. W. *Motion Pictures and Youths A Summary.* Macmillan. N.Y. 1933.

already investigated; but, on the whole, the findings have been less reliable than those already available in the major studies. There are, of course, notable exceptions to this statement. One criticism applies rather generally to these independent studies. For the most part, they show little recognition of the general problems of motion-picture effectiveness revealed or investigated in previous studies.

I. Criteria for Evaluation of Experimental Research in General

Many attempts have been made to establish basic principles for the conduct of experimental educational research, but few of these sets of principles are in such form as to be of value in the evaluation of research studies already conducted and published. The rapid increase in the number of published studies of an experimental nature, and the growing tendency on the part of readers of such studies to accept the results and conclusions without a critical evaluation of the basic data and the methods of their derivation make the postulation of a set of criteria for the evaluation of experimental research not only desirable, but necessary. The criteria listed below, developed by Douglas E. Scates, director of school research, Cincinnati Public Schools, were selected as the most applicable to the evaluation of film experiments.[3]

These criteria are: (1) *Significance of the problem,* (2) *Selection of factors for study,* (3) *Assumptions,* (4) *Appropriateness of general procedure,* (5) *Significance of raw measures,* (6) *Representativeness of sampling,* (7) *Adequacy of data,* (8) *Analysis of data,* and (9) *Interpretation of observations and of analytical findings.*

1. *Significance of the problem.* For the purpose of evaluation the relative "significance of the problem" investi-

[3] An account of the derivation and application of these criteria will be published elsewhere by Dr. Scates and the writer in the near future.

gated in any experiment is regarded as lying in its cruciality either to educational or psychological theory, on the one hand, or in its practical utility on the other hand. The problem is or is not "significant" in so far as it meets the question, "How important is the answer to the problem?" Of secondary importance is the formulation of the problem; that is, whether the problem is defined so as to reveal the essential or crucial differences in the variable or variables being studied. Of tertiary importance is the investigator's adequate consideration of the results of previous investigations; that is, whether the problem is repetitive, whether it is unique, or whether the experimenter sought additional data on a problem already investigated.

2. *Selection of factors for study.* If the problem is significant to educational theory or practice, the next criterion of evaluation is the analysis of the problem into specific issues or aspects; that is, whether the experimenter isolated the problem into specific subordinately related problems. In evaluating the selection of factors for study, the question must be asked: "Are the factors studied actually the causes of the results?" When and if this question is answered in the affirmative, it becomes necessary to determine whether the factors isolated for study by the experimenter are discrete or greatly overlapping. If the former condition obtains, it is necessary for the purposes of evaluation to consider the potential conclusiveness of the factors studied—whether they are adequate, and whether, when taken together, they will give a definite answer to the problem. If the factors are overlapping, it is necessary for the experimenter to study their relative effect on the data secured and the peculiar nature of their interrelation. Finally, there remains for the purpose of evaluation the question of whether all the factors were studied by the experimenter which would throw light on the main problem. It is in this respect that many research

studies fail to attain conclusiveness. Too often do the investigations merely open up the problems for study by failure of the investigators to probe the causes of variation of data derived under somewhat varying conditions.

3. *Assumptions.* The first two criteria were devoted to the significance of the problem and the extent to which the experimenter isolated factors for study. Before the experimental procedure employed to investigate the problem may be considered, assumptions must first be examined that are basic to the technique of investigation and the interpretation of results. The extent of assumptions, their reasonableness, and their recognition by the experimenter are seldom explicitly discussed. More often, they are implicit in the experimental report; still more often, they are entirely ignored. In the evaluation of research, no other single criterion is as important as the clear recognition of the assumptions by the experimenter and the degree to which these assumptions are reasonable or justified. Validity of data and their interpretation rest primarily upon the assumptions upon which they were derived.

4. *Appropriateness of general procedure.* The actual experimental attack on the problem comes next in the critical evaluation. The most important criterion regarding the procedure is its appropriateness to the investigation proposed—whether it is potent, suitable, and searching. The general procedure must be such that it throws into relief the causes of results, of crucial differences, and so on. Unfortunately, the equated-group procedure is widely used in experimental investigations in the field of education despite the manifest impossibility of equating all factors which influence results of instruction.

Involved in this adaptation of technique is the control of irrelevant factors during the experiment. Correspondingly involved is the law of the single variable, under which all

variables are held constant except the one being investigated. In educational research, this law is a principle to be approximated, not a condition readily obtained.

Still another subsidiary consideration is whether all the significant data were secured from the basic sources through the experimental procedure, or whether the acquisition of all significant data necessary to the solution of the particular problem was approximated.

5. *Significance of raw measures.* The criteria from this point are extended to cover actual measures secured through experimentation. Of highest importance in the evaluation of the raw measures is the validity of the procedures employed to secure them. In the evaluation of the "significance of raw measures," validity and reliability will be considered as highly related functions. If the reliability of a test is not established, its validity is open to question, for among other things a test must measure consistently in order to be a valid measure of the function.

Of additional importance to the "significance of raw measures" is the normality of the situation under which they were obtained. Raw measures, in order to be significant, must be secured under conditions which are normal with regard to the phenomenon measured.

How significant raw measures are to a problem can be appraised by answering the question: "Of what function and to what degree are the raw measures actual measures?"

6. *Representativeness of sampling.* A further necessary criterion of data is the sufficiency of the sampling. Data must be gathered over a large enough area, long enough time, wide enough age group, and under sufficiently varying conditions to insure the typicalness of sampling. Thus defined, representative sampling includes not only pupil population but instructional procedure. In many educational investigations, the instructional period is not sufficient in length to

provide the type of results which are necessary for conclusive evidence.

7. *Adequacy of data.* After the significance of the raw measures and the representativeness of the sampling have been evaluated, the additional factor of adequacy is necessary to validity of conclusions. The question, "Were data secured to meet all purposes of the experiment?" is the real test of adequacy. With data secured by means of the control-group technique, a further consideration is the statistical adequacy of differences. In the investigation of functions which are so highly correlated that the establishment of statistical reliability of differences is difficult, a consistency of difference in several measures may be considered an index of reliability.

8. *Analysis of data.* The experimenter's statistical analysis of data is the next criterion of evaluation. This analysis should be not only appropriate, accurate, and complete, but also such as will reveal all the significant items gathered in the investigation. Statistical analysis which stops with measures of central tendency often serves to conceal important variations and relationships. On the other hand, mere elaborateness may tend to conceal important major relationships in a maze of detail.

9. *Interpretation of observations and of analytical findings.* The eight criteria already presented apply to the formulation of the problem, the experimental procedure, and the treatment of data. The next in the sequence is the criterion of interpretation. Valid interpretation is dependent on (a) the recognition of assumptions and of limitations in the experimental technique and statistical procedure, (b) the logic involved in drawing conclusions, (c) the recognition of significant variables, (d) the recognition of inconclusive or inconsistent data, and (e) the completeness with which conclusions are drawn.

Positive contributions. The final consideration—the positive contributions of the investigation—is the logical sequence to the application of the criteria enumerated above. The positive contribution, in itself, is not a criterion, but an outcome of the rigorous application of the criteria to the investigation. It constitutes a statement of the findings of the study in the light of all the influencing factors.

An analysis of these criteria will reveal a serial organization culminating in a statement of conclusions accepted after the application of the criteria. This serial organization begins with a consideration of the problem, proceeds in order through the assumptions, the experimental procedure, the treatment of the data, the interpretation of the data, and concludes with the positive contributions of the investigation. Each criterion develops from those preceding in the order followed in actual experimental investigation; and climaxing the series of criteria is the final evaluation of the contributions of the experiment.

Taken as a whole, the criteria are of such a nature and such an organization that they yield a critical picture of any study in the field of experimental education, and an appraisal of its contribution to experimental procedure and to educational theory and practice. Failure of a research study to meet any one criterion alters its value in relation to all following criteria.

II. Neglected Factors in Experimental Procedure

As the various studies were examined, and as the criteria were applied, it became apparent that the worth of the investigations was limited because of questionable assumptions implicit in the investigations and frequently not at all recognized. An analysis of the experiments reported revealed that these assumptions revolved around certain experimental factors.

Seven neglected factors of experimental procedure were isolated in the sixty-one studies: (1) *Typicalness of classroom procedures,* (2) *Comparability of methods of instruction,* (3) *Methods of measuring results of instruction,* (4) *Limitations of the control group technique,* (5) *Insufficient analysis of data,* (6) *Diversity of grade classification,* and (7) *Incomplete investigation of problems.*

1. *Typicalness of classroom procedure.* One of the most important of the neglected factors is the typicalness of the classroom procedure, or methods of teaching, which experimenters set up for experimental comparison. Many of the investigations are of limited value either to educational theory or to educational practice (or both) on this account. They are devoted to the study of effectiveness of methods long since abandoned or never extensively practiced in American education.

Preliminary to a detailed discussion of this factor, one point should be made. It is recognized that there is value in determining the psychological reaction of pupils to *any* method of instruction an investigator wishes to use, whether that instructional method possesses real or potential value for classroom use. However, relatively few of these studies are devoted to the determination of psychological reactions as such. The majority are concerned with the effectiveness of method in classroom instruction.

Typicalness of classroom procedure will be considered from three points of view: (a) methods employed in teaching, (b) integration of these methods with normal instruction, and (c) length of the instructional period.

(a) *Methods of teaching.* In many experiments, the methods of instruction are atypical. In one, for instance, the material of a motion-picture film was translated into a lecture which was delivered in an auditorium to seventh-grade pupils. The lecture method is seldom, if ever, used to teach seventh-grade geography.

A second example of the atypical instruction adopted in experimental investigations is found in another, in which pupils in the third, fourth, fifth, and sixth grades were given mimeographed reports of the material shown in several films. Teachers were not permitted to use any visual aids in this type of instruction. Normally, textbooks in the elementary school are profusely illustrated, blackboards are abundantly used, projects are developed, and other visual aids are furnished the pupils in one form or another.

These examples are sufficient to illustrate the point that experimenters often neglect to establish normal schoolroom teaching procedure in their investigations. As a result of this neglect the values of their data are considerably lessened, even if they are able to demonstrate certain values for particular experimental methods.

(b) *Integration of teaching methods.* A second neglected aspect of classroom instruction is the integration of the experimental method of teaching with other classroom methods and activities. In many investigations one particular method of instruction has been compared with another *in isolation.* For instance, one investigator studied the comparative effectiveness of the "regular" textbook-recitation method and the film method of instruction. This type of contrast presupposes a regimentation of instruction such that pupils study a textbook and are quizzed by the teacher, on the one hand, or are shown motion pictures without any recitation and quizzing on the other hand. In other words, the film and the textbook-recitation methods of teaching are used without deviation or supplementation throughout the entire period of instruction in the particular subject which the pupils are studying.

In a second study, too, motion pictures on various health topics were presented to one group of students, and lectures based on the films were presented to the other. Results of each type of presentation were measured. Each type of

instruction was considered as *the* instructional method, and not merely as one of many teaching devices to be used regularly and coincidently in the classroom in teaching these topics.

Visual aids, in these cases and in many others cited in the appendix of this study, were considered as methods of instruction, and not as aids to be used as a part of a more diverse and complex organization of instructional procedure.

Failure to integrate one particular teaching device with the many other teaching devices normally used in the classroom has materially diminished the worth of many experimental studies on the values and uses of visual aids.

(c) *Length of the instruction period.* The third respect in which the typicalness of classroom procedure is violated is in the length of the instructional period of the experiment. The period of instruction in experimental investigations was in one case as brief as four minutes. In this instance the effectiveness of motion pictures in relation to age and grade level was studied.

In many other investigations the instructional period was relatively brief. One study was made in which instructional periods of only fourteen minutes were employed. (This period was determined by the time required for the projection of one film.) Since class periods are normally much longer than fourteen minutes, and are distributed over a period of several months during the school year, results of fourteen minutes of instruction can have relatively few implications for general classroom procedure.

The practice of using such short experimental periods has important bearing, too, upon the adequacy and reliability of the data which result from different methods of instruction. Evidence of special effectiveness which actually inheres in some particular method may be expected to increase in amount as the period of instruction is lengthened. A slight,

almost negligible difference between instructional methods, statistically unreliable and perhaps inconsistent in various short experiments, might increase the significant proportions when used over a longer instructional period, and in relation to particular types of learning outcomes. When this extension of instructional period is not provided, there is no way of determining the extent and permanence of differences accruing to various methods or devices of instruction.

While these three aspects of typicalness in classroom procedure have been neglected in many experimental studies, there are, on the other hand, experimental investigations in which they have been respected for their real importance. For instance, Wood and Freeman (59) supplemented well-organized teaching with films in the case of experimental groups, and provided for the use of other visual aids in all groups. Furthermore, the visual aids were used as only one part of the teaching procedure. Experiments were conducted in two fields of instruction—geography and general science—and were extended over a period of three months. In this way, the methods of teaching were typical, and the visual aids were considered as an integral part of normal classroom instruction. The Arnspiger (2), the Clark (5), the Knowlton and Tilton (31), and the Rulon (48) experiments are other examples in which the factor of normal classroom procedure has been properly provided.

(2) *Comparability of methods of instruction.* A second important factor of experimental procedure which has been widely neglected in investigations in the field of visual aids is that of comparability of methods of instruction. Comparisons of visual aids and other methods of instruction have been made in which the internal organization of the materials of instruction has not been the same. In other words, comparisons have been made between "structured" and relatively "unstructured" learning materials.

Motion-picture film is highly structured. One element of its structure is the organization of the material in definite sequence. A motion picture must be projected in essentially the same organization with which it has been finally produced. Attempts to reorganize the film-material classroom projection are made difficult by the necessity of rewinding, and so on, or by the technical skill required to cut and reassemble a film.

A second element of structure in the motion picture is the arrangement of verbal and pictorial material, or captions and scenes. Verbal explanation may come before, during, or after the illustrative material, or in any combination of these three arrangements, but this organization is identical every time the film is projected and in every situation. It does not vary with the teacher, the pupils, the time of day, or the subject matter of instruction.

On the other hand, the structure of other teaching materials is highly flexible. The organization of material in various textbooks differs with the particular texts. The organization of supplementary visual aids, other than films, varies with the teacher who uses them. The organization of all the instructional material, even with the provision of a syllabus or outlines of study, varies with the particular teacher, the particular class, and the particular books and other study material available.

Even when the organizational structure of subject matter is the same for a film and a textbook, study outline, and so on, the identical objective structure may in itself be psychologically different to the pupils. In the film the material is pictorial and verbal, whereas in the textbook or study outline, the material is verbal. In the film, this organization may be psychologically appropriate at one particular level of mental development, while in purely verbal learning material the identical organization may be psychologically inappropriate.

Too little attention has been given in experimental procedure to the factor of structure in comparative methods of instruction. Freeman noted this factor in his discussion of James's experiment (29):

> It is evident . . . that the primary aim in the mind of the experimenter [James] was to secure identity in form and in content between the motion picture film and the oral lecture. This identity was secured by copying and reproducing orally the titles and subtitles and then supplementing these by a few additional sentences. The film, in other words, formed the basis of the organization of the lectures. This procedure differed from that which is followed by McClusky in his experiment. McClusky endeavored, to be sure, to cover the same topics and include the same facts in the oral presentation, or the oral presentation accompanied by charts, as was included in the film, but he did not attempt to follow in this detailed manner the form of presentation in the film.[4]

Of the more recent experiments, that of Arnspiger (2) may be cited as an example of structural differences in learning material. In this investigation the teachers of the control group were furnished with syllabi of the material, including bibliographical references, while those of the experimental group were furnished these syllabi and motion-picture films. Whereas the teachers of the control groups were free to use *any* instructional device available except motion pictures, this teaching was not uniform, was unorganized, and highly diversified. On the other hand, the use of moving pictures in the experimental group was uniform and organized, and the films were highly structured.

This matter of structure may constitute one of the inherent advantages of the motion picture. On the other hand, it may constitute one of its inherent disadvantages.

In either case, the matter of *structure* of learning material has generally been ignored in comparing effectiveness of various methods of *instruction.*

(3) *Methods of measuring results of instruction.* Since the effectiveness of various instructional methods is deter-

[4] Frank N. Freeman. *Visual Education.* University of Chicago Press. 1924. p. 28-9.

mined largely on the basis of tests of one sort or another, great significance is to be attached to the methods of measuring results of instruction. Despite the importance of measurement in relation to the data to which interpretation is given, several important aspects of measurement have been neglected by experimenters. These aspects will be discussed as (a) measurement of pupil responses, (b) objectives of instruction, (c) type of learning, (d) experiential judgment, (e) learning during the experimental period.

(a) *Measurement of pupil responses.* In striving for objectivity of measurement, most experimenters have overlooked the possibility that objective tests, as they are constructed, may not measure *pupil* responses as such, or if they do, that measurement may be inaccurate or misrepresentative. In constructing an objective test, a set of items is developed which represents the response that an experienced teacher, a highly trained experimenter, or a scholar in the subject-matter field *thinks a child should make* as a result of seeing a motion-picture film or a set of slides, or of reading a textbook, or of hearing a lecture, or of any combination of these activities. The mental development, the previous experience, the point of view, and several other factors combined in the total personality of the testmaker are unconsciously reflected in a test so constructed.

At best, the test thus made measures, to some extent, *the degree to which pupil responses coincide with adult responses, or with what adults think pupil responses should be.* There is no certainty, however, that the test measures the responses of the child to the experimental situation.

On the other hand, essay-type tests are more representative of the verbal responses that children, themselves, make under certain conditions. In relatively few experiments was use made of the essay examination. Wood and Freeman (59) used it extensively, McClusky (34) used it sparingly, and Consitt (7) and Marchant (37) used it exclusively.

Even the essay-type test does not measure pupil responses extensively. To a large extent, responses are directed by the nature of the questions. They may, on the one hand, measure recall, organization, language facility, or particular and general ideas arising from the experimental experience. On the other hand, more elementary learning reactions are not always apparent on the essay-type examination. For instance, a child's feeling of familiarity, his readinesses for new and different reactions, are not always recorded in his written essay.

While the difficulty of measurement is herein recognized, the point developed concerning methods of measuring pupil responses used in experimental investigations on the values of films, is that adult-made objective and essay-type tests are not infallible indices to pupil responses in learning situations.

(b) *The objectives of instruction.* Another phase of measurement which has been widely neglected is that of measurement in terms of the *objectives* of instruction. If an individual were to confine his reading to these experimental studies and to ignore other publications on American education, he would develop a warped set of educational objectives. The great majority of experiments are devoted to the values of films for *imparting factual knowledge.* A few experimenters, notably F. D. and H. Y. McClusky (36); Freeman, Shaw, and Walker (16); Freeman and Hoefer (14); Rolfe (46); and Hollis (25) sought to measure effectiveness in terms of *ability to do.* Knowlton and Tilton (31) measured interest in reading, in class recitation, and the like, and Clark (5) attempted to secure measures of the development or change of interests as a result of instruction. On the whole, however, the experimenters were concerned with fact getting in a limited field of subject matter.

Some few experimenters devoted considerable time and effort to the development of objectives in instruction, and then proceeded to ignore all objectives except factual knowl-

edge in measuring results of instruction. A specific illustration of this procedure is found in one report. A unit of instruction in this study was devoted to lower animals. Objectives of instruction similar to those listed below were furnished teachers of both experimental and control groups:

1. A desire to protect small animals.
2. Ability to distinguish between types of small animals.
3. A fearless attitude toward the small animals.
4. Knowledge that small animals are of great value to the farmer.
5. An understanding of the life cycle of small animals.
6. Concomitants of accurate observation, joy in discovery, and kindness towards harmless, helpless animals.
7. A deeper interest in the study of nature.

Despite the development of the above objectives of instruction, the test questions were devised to measure the subject matter of the units. There was no attempt made, in this study, to measure concomitant learnings, attitudes, or appreciations, except as they are reflected in the learning of factual material. If these "concomitants" had been more adequately measured it is quite probable that the differences in favor of the experimental groups would have been even greater.

It appears that most investigators, whatsoever their theoretical notions, view education practically, or experimentally at least, as the process by which factual knowledge is acquired.

(c) *Type of learning.* A third aspect of measurement which has escaped the attention it deserves is the type of learning—visual, verbal, and so on—resulting or expected to result from the use of visual aids. With the exception of the instances cited in the previous discussion of objectives of instruction (in regard to measurement of ability to do), almost all experimenters have measured the results of instruction on the verbal level.

The use of pictorial material does not necessarily develop verbal experience. It may, to some or to a great extent, make this verbalization meaningful, but the measurement of verbal learning is not necessarily a measure of the learning which accrues to the pupils given pictorial experience unless verbal instruction has preceded, accompanied, or followed this pictorial experience.

Many types of learning may be expected to result from the use of visual aids. There may be the mere feeling of familiarity with a certain object, process, or situation. There may be identification of that object, process, or situation, in relation to other objects, processes, or situations. There may be generalization on the verbal level in relation to these experiences. There may be application or ability to perform some new or more complex act. There may be a better concept of relationships, a greater clarity of concepts, new insights, new appreciations, and so on. Any or all of these may develop as a result of the use of visual aids in instruction.

Yet, in measurement of results, verbal tests are most widely used. Of these, the vast majority are objective items on specific elements of a motion picture, a slide, a diagram, a textbook, or a lecture. Wood and Freeman (59) attempted to obtain measures not only on specific items of information, but also on generalizations which the pupils had formed as a result of instruction. They also used drawings to measure pupil experience. Rulon (48) developed a unique "picture" test in which interpretation of pictorially portrayed situations was required in order to answer the questions of the test.

In general, however, measurement of instruction was on the verbal level and was confined, as indicated in the previous discussion, to factual information.

(d) *Experiential judgment.* Another important neglected aspect of measurement is the judgment of competent

judges. Some strange phobia seems to have become attached to the word "subjectivity" or "subjective judgment." The onset of the so-called "scientific movement" in American education has apparently been accompanied by a developing fear of unreliability of teachers' judgments, and an austere reverence for "objective" measurement. All this, despite the fact that the standard of validity of many objective measures is, in the end, the judgment of teachers, observers, and other erring humans.

As a result of this reverence for objectivity and disdain of subjective opinions, the judgments of pupils, the judgments of teachers, and the judgments of experimenters, arrived at through a long series of observations in many and varied situations and under many and varied conditions, have been widely disregarded in investigations of the values of visual aids.

A few notable exceptions have been made to this rule. There is a high degree of consistency among the judgments secured by a few experimenters in widely different geographical areas. The judgments secured from sixty-eight sources by Knowlton and Tilton (31), from the experimental teachers by Wood and Freeman (59), and from English teachers by Consitt (7), are in remarkable agreement. In each case the judgments were arrived at with apparent independence, and as a result of either the viewing or the use in the classroom of the films in these investigations. Teachers' judgments seem to be consistent, opinion to the contrary notwithstanding.

Despite the prejudice against teachers' judgments, they are, nevertheless, a valuable source of information. They are formed on the background of wide experience, in comparison to other existing conditions, and on the basis of exhaustive sampling of reactions over a long period of time. It is unfortunate, too, that the opinion of pupils, as well as

of teachers, have been ignored. Had this condition not obtained, many fruitless investigations, many grubbing hours of test making and scoring, and many painful mathematical calculations might have been spared.

(e) *Learning during the experimental period.* Finally, as a neglected aspect in the measurement of instructional results is the consideration of learning during the experimental period. Too many investigations have been made on the assumption that measures derived at the end of the experimental period actually are measures of learning during that period. One experimenter, for instance, taught various units in industrial arts by three different methods. He assumed that the data from the tests represented learning during the experimental period, despite the fact that no initial tests were given. In another study where no initial tests were given before the experimental period, results in various centers in which the experiments were performed varied widely. As a result of this inconsistency it is impossible to determine whether the differences were due to previous knowledge of the subject, or variations in the technique of teaching, or both.

In more recent experiments, this aspect has not been so generally neglected. Arnspiger (2), for instance, used initial tests and so constructed his final tests that they would represent learning during the experimental period. Wood and Freeman (59) also used initial tests and treated results in terms of gains during the experimental period. Rulon (48) took elaborate precautions to control factors during the experimental period.

An important aspect of the amount of knowledge obtaining before the experimental period is pointed out by Mount (41). Where a large amount of initial knowledge is present, the opportunity for gain in knowledge is diminished, and the treatment of data in terms of gains obtained may not be a true index to the effectiveness of instructional method.

(4) *Limitations of the control group technique.*[5] The technique most generally used (in the experimental studies of visual aids) has been that of control groups. The use of this technique involves an activity of one type on the part of one group, and an activity of another type on the part of the other. The purpose of this technique is to control all variable factors except the one being measured, but while this activity is occupying the experimental group another activity is being indulged in by the control group.

Yet, in the measurement of results of instruction, little attempt, if any, is made to measure equally well the mental activities of both experimental and control groups. For instance, while the experimental group is viewing a motion picture, the control group is watching slides, reading textbooks, listening to oral presentations, etc. The activities of the two groups are different. In the one group a certain type of mental outcome may be developing, in the other, another type. This possibility, however, is not adequately considered in measuring results.

One example of failure to measure the activity of both the experimental and control groups is furnished in a report on the effect of moving-picture titles as study guides following film presentation. Mimeographed copies of the film titles were furnished to the experimental group. The control group received no such study guides. Both groups then engaged in a short period of study with the textbooks and reference books available on the material illustrated by the film. At the end of this study period, tests were given both the experimental and control groups. These tests consisted of almost the *exact film titles* furnished to the experimental group above. A comparison of the film titles with the test items brought out the fact that no item was given that

[5] For a more detailed criticism of the control group technique in experimental education see W. A. Brownell. "Some Neglected Safeguards in Control-Group Experimentation." *Journal of Educational Research.* 27:98-107.

was not an almost exact excerpt from the film titles and that almost all film titles were covered in the test items.

Such is one criticism of the control-group technique. Recent investigations by Rulon (48), Gatto (17), and Arnspiger (2), indicate that wherein the activity of the control group is measured, the control group is superior to the experimental group on those activities in which the former were engaged. Nevertheless, the measurement of the activities of both groups equally well has been neglected in most experimental studies in visual education.

Another criticism of this technique concerns experimenters' notions of equivalence. While a number of variations are found in methods of equating "equivalent" groups, the factors upon which equivalence is based are generally age, grade level, sex, and measures of central tendency and dispersion on tests of "intelligence" and knowledge of some particular subject matter upon which instruction is to be given. Occasionally, individual pupils from two "equated" groups are paired on the basis of these factors, but the general procedure is to equate merely the groups. After this "equation" has been completed, "identical" methods of instruction are used with the "equivalent" groups, with the exception of the variable factor of instruction.

Despite these procedures of "equation," experiment after experiment showed that one method of instruction is superior in one group, and another method is superior in the other group, both groups being "equivalent." The obvious conclusion is that equivalence has not obtained, and that, furthermore, equivalence of groups in all factors is almost impossible.

(5) *Insufficient analysis of data.* Another major factor neglected in experimentation in visual aids is depth of analysis of data. Experimenters are so engrossed in the abstract problems they have formulated for study that they neglect to determine the factors of a motion-picture film, a slide, or

a demonstration that make it particularly effective in relation to a particular type of response.

Two analytical studies of pupil responses were made. The one is H. C. Davis's analysis (7) of data secured on the essay topical tests of the Wood and Freeman study (59), and the other is Terry's analysis (54) of children's responses to the *Yale Chronicles of America* photoplays. These latter were obtained from the stenographic report of classroom activity secured by Knowlton and Tilton (31) and of responses of children on a check experiment in which a historical photoplay produced by the Eastman Company was presented.

In general, analysis of data consists in the statistical computation of measures of central tendency or dispersion (medians, means, standard deviations, quartile deviations), differences of means or medians for comparative methods of instruction, and the reliability of these differences. (Generally, the statistical formulation for reliability of differences of equated groups is neglected—the formula—$\sigma_{M_1-M_2}=\sqrt{\sigma^2_{M_1}+\sigma^2_{M_2}}$ is used for determining the standard deviation of differences.)

Occasionally, as in the case of McClusky's report (34), these data are presented for all experiments in the various cities in which they were performed. Analysis, however, generally ceases at this point. Factors inherent in the various visual aids are neglected, incorrect responses are not recorded, responses to various types of items such as explanation, reasoning, and the like, are not classified. Relative effectiveness on various levels of mental ability is overlooked in many investigations. So, too, are the responses of pupils during the regular classroom procedure. Such studies as those by Davis and by Terry are very greatly needed to throw light on the real problems of instructional methods. These analyses must be intensive, and as such will necessarily be limited to a relatively small area of investigation.

(6) *Diversity of grade classification.* A sixth neglected factor of experimental procedure is grade classification. In several experiments pupils from several grades have been instructed in the same material by the same methods. R. L. Davis (10), for instance, used pupils from the third to the eighth grades in his study. In this particular case, differentiated responses of pupils within this grade distribution was one of the factors investigated. In another study, however, the film material was presented to pupils in the third, fourth, fifth, and sixth grades by three different methods without regard for the adaptation of the material to these levels.

A consideration of the psychological aspects of visual education leads to the theory that different methods of teaching are effective with different levels of mental development. The neglect of this factor of mental development in the use of pupils of various age and grade levels will tend to influence results from the various grade levels taken as a whole.

Wood and Freeman (59) found that the films used in their study were not as effective as other methods of instruction in teaching some aspects of general science in the fourth and fifth grades. It is possible that the use of these films was not appropriate for this grade level, whereas for a higher grade its use is appropriate. In the study of geography on higher grade levels, Wood and Freeman found that the use of films was effective. These illustrations lead to the next and last of the neglected factors of experimental procedure.

(7) *Incomplete investigation of problems.* It is unfortunately true that many investigations stop where significant investigation should begin. This fact is illustrated by the instance cited in relation to the effectiveness of films in one subject on one grade level, and the effectiveness of films in another subject on another grade level. The problem raised by the results of Wood and Freeman's investigation

(59) is: Why are films effective aids in instruction in one subject on one grade level and less effective in another subject on another grade level?

Similarly, the results of Mead's (39) and other investigations raise the question: Why were results with the same method inconsistent in different situations?

Such are the real problems of research in visual education, yet to date they have been ignored. Until they receive experimental attention major problems remain unanswered.

III. Review of Experimental Data

The preceding section is concerned with the criteria for evaluating the effectiveness of films in the classroom, and neglected factors of experimental procedure were discussed. It is the purpose of this section to present and summarize the results of the separate investigations in the particular aspects of effectiveness with which the experimenters were concerned. No attempt is made to discuss the results of all the investigations reported.

The values of the films, as determined by the application of the criteria to the sixty-one investigations evaluated in this study, are classified according to eight major aspects: (1) *Types of pupil responses to films,* (2) *Elimination of wrong responses,* (3) *Effectiveness of films with "dull" and "bright" pupils,* (4) *Effectiveness of films on various grade levels,* (5) *The film and economy of time in instruction,* (6) *Effectiveness of verbal commentary on film presentation,* (7) *Frequency and distribution of projection,* and (8) *Auditorium and classroom projection of films.*

(1) *Types of pupil responses to films.* "Types of pupil responses" have been divided into nine classifications on the basis of various aspects of learning and other pupil activity investigated in the studies. These classifications are: (a) learning factual information, (b) retention of material

learned, (c) habits, skills, and so on, (d) development of understanding of relationships, (e) description, explanation, and the like, (f) "thinking" and "eduction," (g) imagination, (h) development of interest, (i) responses to elements of films, and (j) responses on non-film items.

(a) *Learning factual information.* The great majority of investigations on the values of films in the classroom have been conducted with respect to the learning of factual material. These experiments have covered a wide range of school subjects, grade levels, and comparisons with other methods of instruction.

The value of the film for this purpose is summed up by Wood and Freeman (59) in the statement that the film "gives the child clear-cut notions of the objects and actions in the world about him" (p. 221). Results in agreement with this conclusion are found in the experiments of Arnspiger (2), Consitt (7), Knowlton and Tilton (31), Marchant (37), Watkins (55), Weber (56), and others. In most of these studies the film was used as an integral part of the instructional procedure and in comparison with other methods of instruction. The percentage of increase in factual knowledge varied considerably among the studies.

In other studies, the value of the film has been contrasted with purely oral instruction and measurement in terms of the film material. Limitations of these studies, however, make results inconclusive.

Mount (41) contrasted the relative effect of the use of the film and the use of supplementary reading in high-school physics. Both these teaching aids were used in addition to other visual aids. He found the greater gain of the film group to be very small in comparison to the average gain made by either the control or the supplementary-reading groups. Measurement was made by means of modified standard tests. Results in general agreement with those

reported by Mount were found by Cameron (4) as pertaining to the lecture-discussion method in contrast to the film method.

In contrasting the use of the film with that of the film slide, Brown (3) found the film-slide presentation, with its greater opportunity for exchange of comment between teacher and pupils, superior to the film presentation. This result may have been due in a large measure to the method of film presentation. Verbal accompaniment, as used by Brown, would tend to interrupt and interfere with the film, rather than to explain its important parts.

Freeman, Reeder, and Thomas (15) concluded that in presenting tables, maps, and charts the film is no better than the actual tables, maps, and charts presented as such.

H. C. Davis (9), in her analysis of the results of certain topical tests used in the Wood and Freeman study (59), found visual aids other than the film to be more effective than the film presenting factual information about objects.

Gatto (17) measured the comparative effects of films and supplementary reading as an integral part of instruction. He found that the supplementary reading group was slightly higher on a standardized test of comprehension ability in geography than was the film group, but that on the tests of factual information of the instructional material the film groups were superior.

In conclusion, it may be said that the film is superior to verbal methods of presenting concrete material, but that its superiority to other visual aids varies with the type of material and the type of learning expected.

(b) *Retention of material learned.* Investigations of the effectiveness of the films as measured by permanence of learning have been conducted by Arnspiger (2), Gatto (17), Hansen (20), Knowlton and Tilton (31), Lacy (32), McClusky (34), Rulon (48), Skinner and Rich (50), Sumstine (53), Weber (56), and Young (61). Permanence

of learning was measured by administering delayed tests from one week to three and one-half months after the period of instruction on the experimental material. In general, these tests measured factual material on the verbal level.

The experimental procedures of many of these investigations were of such nature that the results cannot be accepted as adequate or reliable. Lacy, for example, presented the learning material fragmentarily and tested results on the basis of incidental details which Terry (54) has since shown escape attention of pupils when presented in films. There is, however, a high consistency of data among these studies to indicate that the use of the film in instruction is superior to the use of verbal material alone or to the unorganized use of other visual aids, when retention is measured by delayed tests of the type mentioned above. There is also general agreement among the data of these investigations that the percentage of superiority of retention is higher than the percentage of superiority of immediate learning, when superiority is considered in terms of the test results for the nonfilm groups.

The results of the investigations by Gatto and Rulon are particularly significant. Gatto found that the mean score of the film group increased 11 per cent on the delayed test administered five weeks after the instructional period, but the mean score of the nonfilm group decreased 11 per cent in relation to scores on the immediate tests. Gatto, and almost all other experimenters, measured retention by the use of tests which the pupils had taken on some previous occasion during the experimental period—either as a pretest or as a test of immediate learning at the end of the instructional period.

Rulon, however, secured results by a method which eliminated the element of practice effect on the tests. To secure measures of immediate learning, Rulon administered a

pictorial-verbal test to one half of the pupils and a purely verbal test to the other half. On the measurement of retention the order of the two tests was reversed. He found, as did the other experimenters, that the superiority of the scores of the film group over the nonfilm group was higher than the corresponding superiority in immediate learning. Furthermore, Rulon's tests were designed to measure "thinking" ability as well as a mere knowledge of facts. With practice effects eliminated in the manner described, his results are in harmony with those secured on test scores to which a practice effect might have accrued.

It may be said, in summary, that the use of films as an integral part of classroom instruction produces more permanent learning of factual information and more permanent mental reactions of a "thought" variety than do methods of instruction in which nonvisual material is predominantly used, or in which there is unorganized use of other visual aids. This statement does not apply to any type of mental activity beyond that measured by pictorial-verbal and purely verbal tests of the objective type. Unfortunately, no experimental work has been reported on permanence of other types of learning.

(c) *Habits, skills, and the like.* While a large number of investigations have been made on the influence of the film with respect to learning of one type or another, relatively few studies have been made on the influence of the film on learning to perform acts of skill required in certain school subjects, or on personal habits which function outside the school.[6] Freeman, Shaw, and Walker (16), Hollis (25), F. D. and H. Y. McClusky (36), and Rolfe (46) investigated

[6] A number of studies on the social influence of the motion picture have recently been made under a grant from the Payne Foundation. These studies are ably summarized by W. W. Charters in his *Motion Pictures and Youth.* New York. Macmillan Company, 1933. They are not treated here because this discussion is limited exclusively to the instructional film. However, every educator should read Charters' summary for the development of insight into the potentialities that the motion picture holds for education and its rapidly enlarging goals.

the effectiveness of the film in teaching skills required in school subjects. Freeman and Hoefer (14) and Hoefer and Keith (24) made studies on the influence of the film on health habits in the everyday life of the pupils.

The results of the studies by Hollis, the McCluskys, and Rolfe are in agreement that the demonstration is a method of instruction superior to the use of the film in teaching manipulatory skills in domestic science, in high-school physics laboratory exercises, and in industrial arts. In all three of these experiments, oral instruction was given before the pupils were required to perform their tasks, but no instruction was given while the children were engaged in working out their projects. The test made of instructional methods was the relative worth of the pupils' completed work as judged by certain established criteria.

Despite the fact that no oral instruction accompanied any of the visual methods used in these experiments, the worth of demonstration seems to be inherent in its reality; i.e., the actual task is performed before the pupils in all dimensions of objective reality. On the other hand, the film is an impersonal presentation in only two spatial dimensions, and as such furnishes an experience less concrete than is the demonstration. Mere verbal instruction in manipulatory skills is even farther removed from psychological reality. It involves language instruction in a complex tactual performance in which the pupils have had little if any previous experience.

On the other hand, Freeman, Shaw, and Walker found that in teaching position in handwriting, the use of a motion picture, shown three times during the course of regular classroom instruction, was a more effective method than the procedure ordinarily followed in the classroom, or this procedure plus frequent reports to pupils of their scores on handwriting position. On actual improvement in *quality* of

handwriting, however, none of the three methods of instruction was apparently superior to the others.

In this experiment, the value of the film seems to be the clear visual demonstration it gave to all pupils with respect to good and bad positions. In the ordinary class instruction, followed in all groups throughout the experiment, the teacher merely corrected the pupils individually—no special demonstration of good and bad positions was made for the benefit of all pupils. The failure of the film as a particularly effective means of improvement in the quality of handwriting may be due to (1) the emphasis given to position as a means to an end and the ignoring of the end itself, (2) the fact that measurement was made over a three-week period during which measurable improvement in quality of handwriting may not reasonably be expected, or (3) a combination of these two factors. Furthermore, the measurable factors of position in handwriting may not be as complex as those required in the performance of domestic science, industrial arts, and laboratory experiments in high-school physics. Hence, the actual demonstration may not be necessary.

Two studies were concerned with effectiveness of films as compared with other visual aids and oral instruction for inculcating desirable habits of diet and care of the teeth. Neither study (that by Hoefer and Keith, and that by Freeman and Hoefer) disclosed any superiority adhering to the use of the film. This fact may be explained by a consideration of the eminent possibility that pupils had relatively little control over the factors that were measured, i.e., diet, dental treatment, and the like.

Ruffa (47) reported that a film especially prepared for specific purposes provided an excellent medium for teaching elements of track sports.

From these few experiments the tentative conclusions may be drawn that the demonstration method of instruction is

superior to the film and other visual aids in teaching certain complex manipulatory skills required in some of the school subjects. As a method of teaching less complex skills of bodily position the film was found to be effective, but its value in comparison with objective demonstration of a similar nature was not determined. Conclusions regarding the effectiveness of the film in inciting "proper" health habits must be held in abeyance, largely because of the lack of control of pupils over those conditions which make such habits possible. It must be remembered, however, that these conclusions are based on the use of films now outmoded and that since these data were gathered, greatly improved films have been made available for teaching skills.

(d) *Development of relationships.* Knowlton and Tilton (31) found that historical photoplays tended to interfere with the development of a pupil sense of time relationships, and that groups who saw no films were superior to film groups on verbal tests designed to measure this relationship. On the other hand, the authors found the photoplays to be most effective in teaching a knowledge of interrelationships involving the interaction of events and forces.

(e) *Description, explanation, and the like.* Wood and Freeman (59) interpreted the results of their essay-type "topical" tests as indicative of the value of the film in developing descriptive ability, as this ability was measured by the tests. On essay-type questions which are even more abstract than those involving description, namely, explanation and comparison, the authors note that the film and nonfilm groups were approximately equal. The Wood and Freeman investigation, however, was attended by many limitations. Woodburn (60) reported a small but positive gain through the use of films in teaching knowledge of relationships, size, and shape in ninth-grade general science.

(f) *"Thinking" and "eduction."* Clark (5) measured the relative effectiveness of sound and silent pictures on the first-year college level in the development of "ability to think." He found, in so far as short essay tests measured this ability, that the two methods of film presentation were equally effective.

Rulon (48) classified some of his test items under the general head of "eduction." By "eduction" items he meant those which called for more than a mere recall of facts. He was particularly interested in the types of mental activity involving perception of relationship or application of some general principle. In other words, his "eduction" items required intelligent thinking from factual knowledge or generalizations. He found that, in so far as his tests measured "eduction," the film groups were superior to those which had studied only textbook material, and that these groups were relatively superior on "eduction" than on purely factual items.

(g) *Imagination.* Consitt (7) reported, on the basis of pupil and teacher opinion, that the use of films in teaching history stimulated the imagination of children. "The children realize the past, gain more sympathetic insight into the lives and feelings of the men and women of the past, and get a fuller and clearer picture of the environment; thus, they can the better imaginatively reconstruct for themselves other scenes of the same period as those seen on the films" (p. 378). In support of this contention she reproduces scenarios written by girls who had viewed historical pictures in the experiments. She also cites reports of children's evaluations in which the children describe films as "clearer," giving "more details," and so on.

While the experimental evidence is inconclusive, yet it is in agreement with common experience. However, purely verbal presentation and visual presentation by media other

than the film may also be expected to stimulate the imagination.

(h) *Development of interest.* Several investigations have been concerned with the effect of motion pictures on pupils' interests and activity in the classroom. There is evidence from these studies that the film stimulates pupils to great interest and activity in the subject of instruction and in classroom participation.

Objective measures of some aspects of pupil interest developed through motion-picture presentation have been reported by Clark (5), Freeman and Hoefer (14), Knowlton and Tilton (31), Westfall (57), and Dash (8).

Knowlton and Tilton kept a record of the number of recitations, voluntary and directed, and of the amount of voluntary reading done by seventh-grade history pupils both in class and outside of class. These investigators found that the *Yale Chronicles of America* photoplays stimulated classroom participation in recitation and discussion, and also stimulated pupils to do voluntary reading in the classroom to a far greater extent than did the use of ordinary classroom methods. No increase in the amount of reading done outside of class was found in the film group, however.

Freeman and Hoefer reported that in teaching, health films stimulated children to bring in more clippings, pictures, and the like, on the topics studied than did the unorganized use of other visual aids. On the other hand, there was no noticeable difference in the amount of voluntary reading outside of class as between the film and nonfilm groups.

The apparent ineffectiveness of the film in stimulating a greater degree of reading outside of class may have been due to the lack of available reading material, the press of other classwork, or the unreliability and inadequacy of the pupil reports of this reading. Evidence secured from these two experiments indicates that films are effective in develop-

ing classroom participation in discussion and recitation, in stimulating interest in other visual and popular reading material on the topic of the film, and in stimulating voluntary reading of materials on the film topics available in the classroom.

Corroborating evidence on the values of the film in the development of interest and self-activity of pupils was secured by Consitt (7) and by Wood and Freeman (59). Their method was to summarize the judgments of teachers who used films in teaching geography, general science, Latin, and history. These judgments were obtained from teachers in widely differing geographical areas, on different subject matter of instruction, and under widely differing conditions of teaching. They were remarkably consistent and in agreement with the more objective measures secured by Knowlton and Tilton and Freeman and Hoefer. This general consistency indicates the reliability of teachers' subjective judgments of values of teaching methods observed over a considerable period of time, on a background of wide experience, and on close observation of a wide variety of pupil reactions.

In the judgment of the teachers in the British inquiry conducted by Consitt, and in the elaborate experiment conducted by Wood and Freeman, the use of films as an integral part of classroom procedure arouses and maintains pupil interest and increases the amount of voluntary reading and class discussion. Unfortunately, neither of these studies inquired into the effectiveness of other visual aids in stimulating pupil interest and activity. The reports of the Wood and Freeman study were confined to the film teachers. It is entirely possible that had similar reports been secured from the nonfilm teachers who made wide use of other visual aids, similar values would have been reported.

The use of visual aids furnishes the primitive experience necessary to meaningful generalization. The thrill of learn-

ing and the awakening interest in the subject arise from the use of teaching methods which make meaningful learning a psychological consequence of instruction.

The measurement of effectiveness of demonstration, sound films, and silent films in developing interest and sustaining attention was attempted by Clark (5). For his investigation he used questionnaires to compare the effectiveness of these three methods of presenting science material on the first-year college level. Attention was measured by determining the number of students whose attention was distracted from the films or demonstration by the ringing of a bell. As far as the results of the questionnaires indicated, no one of the three methods was superior to the other two in developing and sustaining interest in the subject. In the presence of a distracting auditory stimulus the attention of fewer students was visually distracted at the sound film presentation, more at the silent film, and the greatest number in the case of the demonstration. The various combinations of sound and light intensity during these methods of presentation may account largely for the results.

To summarize the data from the various investigations: there seems to be ample evidence that films are effective in developing and sustaining interest and activity on the part of the pupil in various school subjects on various grade levels.

(i) *Responses to elements of films.* Despite all the experimentation in the use of films, little attention has been given to the elementary features of films which produce the responses observed in children. Moreover, there has been little study of the specific responses made to these elements. The suggestion has been advanced that the film element of "action" is the one important film factor which is not duplicated by other visual aids. While this may be true, the value of "action" in the abstract is neither conclusively proved nor specifically demonstrated.

The most elaborate—in fact the only—objective analysis of pupil responses to elements of films was made by Terry (54). She analyzed the types of children's responses to the *Yale Chronicles of America* photoplays as recorded in the stenographic report of the class proceedings in the Knowlton and Tilton investigation (31). From this analysis Terry found that "adolescent children show a decided preference for historical personages" (p. 133). Sixty per cent of the children's responses in class were classified as responses to persons. Furthermore, she concluded that "inasmuch as there were many scenes in the photoplays depicting action, yet so large a percentage of the responses were about persons, it would seem that children are not able to discriminate between people, and people as a part of action" (p. 133).

Contrary to the expectation of many optimistic educators, Terry found little evidence of "incidental" learning. Only 25 of the 3,446 responses recorded by the observers were about manners. A slightly greater number, but a relatively small percentage of the total responses, were made to speech, dress, recreation, and customs as portrayed in the films. It is the theory of some more modern educators that as interest is aroused toward one goal, pupils will "incidentally" learn many of the outcomes set for instruction in the more traditional organization of pupil experience. The result of film instruction in American history, as predicted on the basis of "incidental" theory, would be a knowledge of the dress, manners, customs, and so forth, of the actors as well as the knowledge of those things toward which the interest of the pupils was originally aroused.

Terry did find, however, a great degree of interest in details on the part of the children, "a knowledge of which would prove of value to them in their further study of history" (p. 134).

Despite the fact that commercial moving pictures have been found to affect the emotions of children to a surprising

degree, Terry reported that "the primary appeal in pictures of the type described in the study seems intellectual rather than emotional as revealed by the larger number of responses to certain types." (p. 134). It is quite possible that the effect of the "mental set" engendered in the classroom is sufficient to offset emotional appeal of the didactic film, particularly if that emotional appeal is not strongly developed in the film.

Terry's classifications are not above reproach, in that they did not sharply differentiate reactions (if such differentiation is possible). Nevertheless, they indicate the great necessity of analytical study of the factors of motion-picture films to which children respond as an essential step in determining the values of the films.

From the analysis of Terry, it may be concluded that pupils react to persons in historical photoplays more than to any other one element, including the abstract element of action. Apparently the thing in action is important to the child, i.e., the particularized action.

(j) *Responses on nonfilm items.* A few experimenters differentiated the items of tests used to measure results of instruction into (1) the items whose answers were found directly or indirectly in the films and (2) the items whose answers were found in material other than the films.

H. C. Davis (9), in analyzing the topical test results of the Wood and Freeman study (59), found that the groups to which films were shown tended to be superior on those items shown in the film, but that the groups to which other visual aids and the study material were available tended to be superior on those test items found in sources of information other than the film.

In Rulon's experiment (48), especially written and illustrated textbooks were used in all experimental groups, and films especially constructed to correlate with the material of the textbook were presented three times on each unit to the

film groups. His data show that groups to which the films were not shown scored 15 per cent higher on nonfilm items of the immediate tests than did the groups to which the films were shown. On the retention test, however, this difference was wiped out.

Arnspiger (2) found that the gains of nonfilm groups tended to be slightly higher in three of the four natural science units on items not shown in the film, but that in all music units the film groups were slightly higher on these items.

Results secured on experiments in which standardized tests were used—Cockrum (6), Gatto (17), Knowlton and Tilton (31), and Mount (41)—showed no significant difference between groups using films in instruction and those using other methods including demonstrations, experiments, supplementary reading, and so on. Standard tests are not built to measure particular material covered in a film. The results from the four experiments mentioned above, therefore, indicate that the mere use of certain films is no guarantee of increase in all types of learning, or of increase in learning in all areas of subject illustrated by a film. Furthermore, these results, and those secured by Davis, Rulon, and Arnspiger, indicate that when the learning activities of the control groups are measured to even a slight extent, the control groups are superior to somewhat the same extent in the mental activity in which they engaged and that the experimental groups are superior in the particular activity in which they engaged. These trends are indicated only in so far as the tests actually measure the results of all types of instruction and the objectives of these types of instruction.

There is evidence, however, to indicate that on retention of information not directly illustrated by the films but closely related to the film material, groups to whom the films are shown retain approximately the same amount of this mate-

rial as do the non-film groups, even though the latter are superior on this material when measured at the end of the instructional period.

(2) *Elimination of wrong responses.* The conventional method of measuring effectiveness of any method of instruction is to record the number of correct responses on tests designed to measure certain functions. In this way, the effectiveness of any particular method can be determined in relation to the amount of specified information, thinking, explanation, and so on, which the pupil possesses, subject, of course, to the limiting factors of the experimental procedure and measures of results. Such a procedure, however, provides no measure of *wrong* learning. It is of equal importance in the evaluation of any instructional method to determine the extent to which this method tends to eliminate *wrong* learning as it is to determine the extent to which it facilitates *right* learning. In only one investigation of the values of motion pictures in education was this aspect of measurement recognized and analyzed.

H. C. Davis (9) set about the task of analyzing the topical essay-test scores secured by Wood and Freeman (59). She found that the value of the film in eliminating wrong and irrelevant statements varied with the units of instruction and the types of questions. While in a large number of questions there was no significant difference between children to whom films were shown and children to whom they were not shown, on some questions there was a significant difference. On these latter questions in geography units, the percentage of children making wrong or irrelevant responses was lower in the film group, and in the general science units the percentage of the film group who omitted answers was less than that of the nonfilm group. In terms of fewer wrong responses the film group was superior on questions calling for description.

From Davis's analysis one value of the film may be said to lie in its function of reducing the tendency on the part of pupils to make inaccurate statements and to include unnecessary remarks. It cannot, however, be said that the film is more valuable in this function than are other methods of instruction. In one subject one method of instruction appears to be better, and in another subject the other. The value of the film, then, in eliminating the tendency toward wrong learning and unorganized thinking varies with the type of response measured and with the subject matter of instruction.

(3) *Effectiveness of films with "dull" and "bright" pupils.* The effectiveness of motion picture films with "dull" and "bright" children has been studied by Arnspiger (2), Consitt (7), Davis (9), Knowlton and Tilton (31), Mason (38), Mock (40), Terry (54), Westfall (57), Wolfe (58). These investigations were carried on in several different subjects, and the effectiveness of the film was compared with that of several different methods.

There is agreement of opinion (Consitt, Knowlton and Tilton, Mock, and Wolfe) that films are relatively more effective for "dull" than for "bright" children when effectiveness is measured by verbal tests of factual information. On the other hand, Arnspiger's data indicate that the effectiveness of films with "dull" and "bright" children varies with the subject matter of the films, and that in neither of the two school subjects studied in his investigation was the difference statistically significant. A statistically significant difference on test scores for "dull" and "bright" pupils would not necessarily be expected, since the method of instruction is identical, and the range of intelligence relatively small.

Davis, in analyzing the responses of children on topical tests of the Wood and Freeman investigation (59), found that films were equally effective for "dull" and "bright"

pupils. These tests, however, were designed to measure generalizations and not specific information as were those used in other investigations.

Terry analyzed children's responses to historical photoplays and found that "dull" children respond as readily to films as do "bright" children, but they do not see as many details in a film as do the "bright" children.

Westfall reported that "dull" children benefit more from oral accompaniment to films than do they from the presentation of films with printed captions or without any verbal accompaniment whatsoever.

Mason (38) reported that two showings of the same film were more effective with "dull" than with "bright" children. This study indicates the need for different methods of using films with different types of pupils.

In summary, the effectiveness of films with children of different levels of "intelligence" must be expected to vary with the subject taught and with the learning outcomes measured. Where effectiveness is considered in terms of verbal responses on factual information, films seem to be relatively more effective for "dull" than for "bright" children, depending on the subject of instruction and the method of presentation. Where effectiveness is considered in terms of ability to make verbal generalizations, films do not seem to be more effective for "dull" than for "bright" pupils. Where effectiveness is considered in terms of number of discriminations, the films are more effective for "bright" pupils, because "bright" pupils tend to make more discriminations than do "dull" pupils.

(4) *Effectiveness of films on various grade levels.* The effectiveness of the film with respect to various grade levels was investigated directly by Consitt (7) and R. L. Davis (10), and indirectly by Mead (39). Many investigations have been made of the values of the film in different school

grades, but these three experimenters are the only ones who have given direct attention to the problem as such.

Consitt and Davis found that below the third grade in school, the use of films was less effective than on grade levels above the third. Both agree that there is a general increase in effectiveness of the film from the ninth year upward, but Davis concluded that this increase is not uniform. No evidence has been furnished to indicate the rate of increase or the point at which effectiveness ceases to increase, if at all. Consitt noted that the length of the film should be short on the lower grade levels.

Mead remarked an increase of effectiveness of all methods of instruction used in his investigation, including nonvisual, film alone, and film accompanied by verbal discussion, from the third to the sixth grade, but did not note any particular increase for any of the three methods of instruction.

Despite the importance of the problem of effectiveness of films for various age and grade levels, there are few reliable data available. Consitt's conclusions were arrived at on the basis of a few teachers' judgments from a few observations; Davis' data were secured from one four-minute presentation of a single film; and Mead's interpretation is based on unequivalent material and tests.

An increase in pupil reaction to a film would be expected as the age and grade level of pupils increase. The extent of the increase, the curve of the increase, and the optimum point of effectiveness remain to be investigated. The limitations of pupil reaction to films below the third grade may be due, not to the films or to the grade level of the children, but to the type of measures used and the type of outcome expected. Psychologically, the reaction of a seven-year-old child and a twelve-year-old child to the same film may be, and probably is, very different in kind, but each child reacts in some way or another to the film. The problem, then, is

to determine in what way the movie is effective on various levels of mental maturity.

(5) *The film and economy of time in instruction.* Gibbs (18) and Rogers (45) investigated the value of the film as an economical method of instruction. Their measures were in terms of amount of factual information learned per minute of instruction. Several different methods of study in which the film and verbal methods of instruction were used in varying amounts were compared in these investigations.

While there is agreement between Gibbs and Rogers that the film is an economical method of teaching, the limitations of the reliability of their tests, the limitations of the techniques of experimentation, and the narrowness of the concept of "learning" make their data inadequate and their conclusions unsound. The problem of economy is how well pupils learn to make certain desirable mental reactions in terms of the amount of time spent in instruction. The time element will be conditioned by many factors, such as the mental ability of the pupil, the difficulty of the material, the previous experience of the pupil, and so on. These factors have been completely ignored by both Gibbs and Rogers.

(6) *Effectiveness of verbal commentary on film presentation.* The effectiveness of verbal commentary on film presentation has been investigated by a large number of experimenters from several points of view. In practically all studies, however, the measurement has been in terms of verbal responses of pupils on objective tests of factual information. The data from these investigations, consequently, are applicable only to those types of learning which were measured on the verbal level by these tests. Such outcomes as vividness of imagery, variety of visual detail, and so on, were ignored by the experimenters.

There is general agreement among the results of investigations by Einbecker (13), Mead (39), McClusky (34),

F. D. and H. Y. McClusky (35), Weber (56), and Westfall (57) that oral commentary on a film is more effective than presentation of a film without oral commentary or with written titles. Einbecker and McClusky agree that verbal accompaniment is better than purely film presentation. Hollis (25) found evidence that the film followed by verbal discussion was more effective than the presentation of the film following the discussion. Consitt (7) reported agreement with this conclusion.

There is an inconsistency of results in experiments in which the sound and silent film were compared. Einbecker's data indicated that the silent picture accompanied by teacher's comments was superior to talking pictures in the learning of new technical words or unfamiliar words, but that both were equally effective in other respects as measured by factual information. Westfall, on the other hand, interpreted his results as indicating that a mechanically produced lecture was significantly superior to any of the other forms of verbal accompaniment used in his experiment. Both investigations, however, are attended by rather important limitations.

Clark (5) found that silent and sound films were equally effective as instructional methods when results were measured in terms of factual information. Sumstine (53), on the other hand, found that verbal accompaniment was positively detrimental in film instruction. Both these investigations, particularly the latter, are considerably handicapped by limitations of technique of measurement. Hansen (21) reported no reliable difference between teacher and film commentary, when the verbalization was identical.

When sound films were compared with demonstrations, Clark found neither of his two methods significantly superior, although the demonstration was slightly superior as measured by tests of factual information. On the other hand, Eads and Stover (12) found a sound film superior to a demon-

stration in teaching techniques of diagnosis and remedial treatment in arithmetic to teachers on the college level.

From the data available on the problem of verbal commentary on film presentation it may be concluded (a) that some verbal accompaniment is necessary to films when learning is measured by verbal tests of factual information, (b) the superiority of sound films or silent films accompanied by teacher comment depends on the type of material and the type of comment, (c) verbal discussion after film presentation is more effective than film presentation after verbal discussion, and (d) oral comment is superior to written comment because the former eliminates the factor of pupil reading difficulties.

(7) *Frequency and distribution of projection.* The problem of frequency and distribution of film projection has not been investigated as such in the experiments reported on the effectiveness of the film. Poland (43) touched upon the problem, but did not probe deeply. Rulon (48) made a short preliminary investigation to determine the number of projections of film material pupils considered optimum, and on the basis of pupil opinion selected three projections as a method in his experiment on values of sound films in general science teaching. McClusky (34) made several comparisons of frequency of film projection, but the basis of comparison was the use of some other visual aid. Wood and Freeman (59) arbitrarily selected the method of presenting the whole film first and the various reels later in those parts of the unit which they illustrated. Eads and Stover (12) compared the effectiveness of one and two projections of films, but not in relation to other classroom procedures. Dash (8) varied the number of projections but obtained no significant data for general usage.

Eads and Stover found that students who saw a film twice made higher scores on a test of factual information than did students who only saw it once.

No conclusions on the problem of frequency and distribution of projection are justified on the basis of experimental data reported so far.

(8) *Auditorium and classroom projection of films.* The problem of use of films in relation to the size of the instructional group was investigated by Knowlton and Tilton (30). In this investigation, average-sized class groups were shown historical photoplays in the classroom in addition to the regular verbal instruction, and groups of over two hundred pupils were shown the same films in the school auditorium. In the auditorium instruction other visual aids were generally used to fill in the class period before or after the film presentation. It was found that the results on factual tests were consistently higher for the groups who had seen the films in the classroom.

This result follows from the fact that pupils, like adults, react to total situations, and that the situation in the auditorium is entirely different from that of the classroom. A school auditorium is generally used for assemblies, entertainments, and the like, and as such produces a different "mental set" in the pupils than does the classroom, which is the normal situation for instruction.

Stoddard (52) compared auditorium film use with classroom nonfilm use, but since a duality of factors was involved his conclusions do not pertain to the problem of auditorium versus classroom projection.

IV. Implications of Experimental Data for Educational Practice

This section is devoted to suggestions on the use of motion pictures and related visual aids in the classroom, as gleaned from the results of the various investigations.

It is not the purpose here to present a Talmud, a Koran, or a Bible of authoritative doctrines which must be followed

by the orthodox teacher, the conservative administrator, or the aspiring research worker. The discussion is purely suggestive.

Educational Use of Visual Aids. The suggestions herewith presented apply in the main to the use of the motion picture, but are also extended in application to the use of other visual aids closely allied to the motion picture. In some situations the motion picture has no inherent advantage over other visual aids, such as the demonstration, the slide, and the like. The discussion, therefore, is extended to the motion picture and related aids.

Suggestions pertaining to the use of visual aids in school situations are presented under four aspects: (a) the place of visual aids in instruction, (b) the amount of visual instruction, (c) the type of visual aid, and (d) the technique of use of visual aids. Various factors which should determine these various aspects of instruction are presented in this discussion.

As these aspects are inseparably related to one another, so it will be found that the application of the suggestions in regard to any one aspect is contingent upon conditions in relation to the other aspects. For instance, in the discussion of the amount of visual instruction, this aspect cannot be isolated and abstracted from all other aspects; rather, the amount of visual instruction is related to the place of visual education in instruction, to the type of visual instruction, and to the technique of the use of visual aids. Similarly, this interrelation of aspects involves a fundamental functional unity of conditioning psychological factors, i. e., the same conditioning psychological factors are basic to all four aspects. Consequently, the procedure suggested in any one of these aspects is not only a function of the other three, but of the same psychological factors operative in all four.

(a) *The place of visual aids in instruction.* The place of visual aids in instruction is a function of (1) the educa-

tional outcomes which are set for instruction, and (2) the mental development of the children in relation to the particular subject matter of instruction. If, in a given unit of learning, the outcome of instruction is to be improved facility in language expression, in reading ability, in study habits, and the like, the use of visual aids, if used at all, must be subordinate to verbal instruction. If, on the other hand, the outcome of the unit is to be richer experience, more vivid imagery, or more detailed concrete knowledge, visual aids become increasingly important. Still again, if the outcome of instruction is ability to form meaningful generalizations, a combination of visual aids, verbal instruction, and teaching of generalization should be used. The mere use of visual aids without verbal instruction and without tuition in generalization is no guarantee that meaningful generalization will result from instruction.

In the determination of the place of visual aids in the curriculum, the important consideration is not the visual aid. The center of importance is the child—the changes to be made in him toward set outcomes. The value of the visual aid (motion picture or otherwise) is relative to the change in the child in the direction of the desired outcome.

The question is not this visual aid or none, or this visual aid or that visual aid. The real question which confronts the teacher is: How can I bring about the desired change in the child? Visual aids, like verbal instruction, are means toward the larger end.

The determination of the place of visual aids in instruction, then, is a function of the desired outcome of instruction in relation to the present mental development of the child.

(b) *The amount of visual instruction.* The extent to which visual aids must be used is a function of (1) the intellectual level of the pupil, (2) his previous experience in the subject, and (3) the difficulty of the learning material.

The difference in ability to discriminate psychological objects, the difference in rate of generalization, and the difference in habits of concrete and abstract mental activity between the "dull" and the "bright" pupil determine the extent to which visual aids should be used with these pupils. Apparently "bright" pupils do not require the same amount of visual experience as do "dull" children for either elementary discrimination or abstract generalization. It is a mistake to believe, however, that visual aids are harmful to "bright" pupils. This misconception arises from the failure to consider all the possible types of value to be derived. "Dull" pupils get one thing; "bright" pupils get another from the same film. Visual experience does not always result in meaningful abstraction on the part of the "bright" pupil to the extent that the presentation of more abstract study material does. On the other hand, "bright" pupils seem to observe more material in visual aids than do "dull" children. Consequently, visual aids must be used more often with the "dull" child than with the "bright" child.

A second condition of the amount of visual instruction, in addition to the intellectual level of the pupil, is the extent and adequacy of previous experience. Thus, pupils in certain sections of certain Southern states will not require the same amount of visual instruction in the economic geography of cotton culture as will pupils in other sections of the country in which cotton is not raised.

Finally, amount of visual instruction is determined by the complexity of the learning material. The relative amount of visual experience necessary to the various desirable outcomes of instruction will increase, in proportion to the complexity of material, from the relatively simple to the relatively complex.

(c) *The type of visual aid.* The type of visual aid—the school journey, the object or model, the stereograph, the film,

the slide, the flat picture, the map, the chart, or the like—to be used will be determined by (1) the previous experience of the pupil, (2) the type of learning outcome, and (3) the type of material being studied.

If the purpose of instruction is to reconstruct the past, to show the interaction of persons, processes, or events, and to do these things in detail, the film is an excellent medium of instruction. The value of any particular film or films is determined by the amount of previous experience of the pupil with this type of activity. If, on the other hand, a knowledge of objects, particular settings, or particular things, is the desired outcome of instruction, the presentation of the object itself, or of various types of reproductions of the object will be equally effective if not superior to the film. The advantage of flexibility of instruction inheres in a method which can be adapted in time and amount of instruction in relation to the particular needs of the pupils and the particular outcomes of instruction. If, finally, the object of instruction is to teach how to do a certain act, the actual demonstration of how to do the act is probably superior to a film or other visual aids.

(d) *Technique of use of visual aids.* The particular way in which visual aids are to be used, whether they should be presented with or without verbal accompaniment, whether they should be presented before or after verbal instruction, and how rapid and rhythmical the sequence should be, is a function of (1) the previous experience of the pupils, (2) the objective of instruction, and (3) the difficulty of the material of instruction.

If, for instance, pupils have had relatively little previous experience in a certain subject, and the objective of instruction is vivid visual imagery, a short introductory talk on the relation of the visual material to the subject and a few remarks on the direction of observation toward certain parts

of the visual material may be sufficient. If, however, the ability to generalize and to relate this material to other material is the desired outcome, verbal discussion following the presentation is advantageous. The rapidity with which the visual aids should be presented and the rhythm of their presentation are largely functions of the difficulty of the material of instruction.

No hard and fast rules may be laid down on the matter of verbal accompaniment or when it should be used. Verbal experience is a prerequisite to verbal learning. Its use is a function of the particular mental reaction desired.

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Part Six

TEACHER PREPARATION IN VISUAL EDUCATION

COMPILED BY
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TEACHER PREPARATION IN VISUAL EDUCATION

Introduction

The need for preparation of teachers in the utilization of visual aids is commonly recognized in administrative programs [1] and has been voiced in public addresses and published articles for at least fifteen years. Such statements are found as the following:

"We cannot hope to achieve the results that are predicted through the use of visual materials without training teachers in this new technique."

"The director of visual education, in cooperation with specialists throughout the school system must provide for the training of teachers in service. There are definite techniques for the use of visual aids, and teachers should be specially trained in those techniques."

"The visual-aids department should train teachers in proper methods of using aids and equipment. Provide means whereby teachers may learn methods of visual presentation before the equipment is purchased."

These statements may be interpreted as suggesting as means to be employed both pre-service and in-service training, college courses, in residence or extension, and supervisory activities of general supervisors or directors of visual education.

This compilation is concerned particularly with institutional provision through college offerings to be used by teachers either before or during actual employment. For a bibliography dealing with the in-service education afforded through supervisors within the school system, the digests on administration of visual aids should be consulted.

A survey [2] in 1922 revealed a beginning of definite provision both for pre-service and in-service training of teach-

[1] See articles by Strayer, Gregory, Reitze, Whittinghill, Sigman, Worrell, and Brunstetter in the section on Administration.

[2] Dorris, Anna V. "Training of Teachers in Visual Instruction."

ers. Half a dozen normal schools were offering courses in visual instruction, of which four were in the regular session and two in summer. Some schools not offering courses reported use of visual aids in the teaching of science and geography. In at least one city system, provision was being made for training teachers in service.

Practically ever since the publication of this survey, a campaign of promotion has been carried on in more or less organized fashion by administrators and teachers impressed with the need of teacher preparation in the visual field. Results are noticeable if not noteworthy. In the summer of 1937, eighty-six such courses were reported [3] from eighty institutions, mainly state universities and teachers' colleges. Two states have made preparation in this field mandatory for teachers, Pennsylvania by requiring it for certification, and New Jersey by making it a requirement in the four-year teachers' college courses.

In view of the widespread and increasing interest today in the educational use of visual materials and the expression of this interest as notably illustrated in Pennsylvania's and New Jersey's recent provisions for the preparation of teachers in this field, it has become extremely important to consider what the nature and content of the preparation should be. Diverse opinions are held by leaders in the field, both as to the desirable inclusion and the curriculum organization of the offerings to be made.

The most conspicuous question of organization is whether a specific course, or courses, in visual education, sometimes called a core course, should be offered,[4] or whether the field should receive attention through exploitation of the visual aspects and materials of all college courses.[5] The field is somewhat analogous to English. Indeed, in a recent con-

[3] "Summer Courses in Visual Instruction." *Educational Screen.* May 1937.
[4] Merton, McClusky, Yeager.
[5] Freeman, McClusky (Finding the Facts), Anderson, Gregory.

ference [6] on Teacher Training in Visual Instruction, one participant stated that visual materials constitute a new language of communication, the use of which is comparably important to the use of the spoken or printed word. It is a common position of English instructors that they alone are unable to give all the teaching needed in that field and that every teacher, of whatever subject, has a part to play in developing his students' control of the mother tongue through their practice in employing it effectively to the ends appropriate in his course.

Common positions with respect to visual education are of three types: (1) It is an essential part of practically every field of education, and the best possible preparation of teachers to make use of visual materials is to observe and use them in their functional relationships in each course. (2) Special courses are necessary in order to effect the necessary learnings involved in the full scope of visual education. (3) A combination or compromise between the two positions is the best solution.

Arguments are advanced both for and against the "core" course [7] or special department provision for visual education. It is claimed in support of special provision that what is everybody's business is nobody's business. The opposing argument is twofold: (1) the scope of visual education is too broad for any one person's or department's grasp; and (2) the most effective educational procedure ties materials and technique to content.

The scope contemplated by leading representatives in the field of visual instruction is indeed extensive, including orientation both historically and philosophically; acquaintance with all types of visual aids, from the excursion to the sound motion picture, both as to their use and their production through photography, scenario writing, slide making,

[6] See footnote 11.
[7] See footnotes 4 and 5, above.

and the like; knowledge of sources of both free and commercial materials; criteria for selection; technical and mechanical problems in the use, care, and repair of apparatus and equipment; methods of use in various school fields and on the several educational levels, including psychology and techniques; application of the theatrical motion picture to education; and problems of supervision and administration.

The tendency in some teachers' colleges to minimize emphasis on methods of teaching to the extent of offering no separate courses in methods is an illustration of the extreme application of the second argument against special courses in visual education, since the field is probably best interpreted as a method of teaching, rather than as a self-contained body of content.

An answer to the question of the appropriate organization of teacher training in this field can be reached only through consideration of the objectives and functions to be served by visual materials, and of the knowledges, understandings, skills, attitudes, and appreciations with respect to usual materials which are needed by teachers and principals. Such a study is yet to be made.

An illustration of a compromise, or compromise position, which utilizes every department of the college and provides in addition a special spear-head course is to be found in the recently developed curriculum for New Jersey's four-year teachers' colleges. A course in visual education is here offered in the third year, with the purpose of organizing, supplementing, and systematizing the more incidental learnings with respect to visual materials which are designed to characterize the course offerings in any subject wherein they are pertinent throughout the college course. Thus courses in geography presumably will make use of maps, excursions, slides, still pictures, models, films, or other materials contributing to the acquisition of desired geographical learnings,

and will arouse the awareness of the prospective teacher to the contributions of such resources in this field of study; courses in English will utilize motion-picture presentations of Shakespeare's plays or Dickens' novels and develop discrimination and appreciation of the art of the cinema; courses in the physical sciences may study the mechanics of projection or photography; courses in psychology may consider visual stimuli and their effect on attention, or the place of objective and concrete experience in the development of ideas.

It will be the province of the visual-education course in this total program to draw upon all these preceding learnings, synthesize them, and organize them with such supplementary content as is necessary, so as to point toward the application and use of visual materials in pursuing the general and special objectives of the several fields of teaching or administration which lie before the students. Whatever the ultimate decision on this question of organization (if a single answer should indeed be reached in every case), it seems probable that the whole problem of teacher preparation may need to be attacked in two stages or along two parallel lines. There possibly should be in most situations both short-time and long-time programs, the former including elementary acquaintance with the simpler materials and techniques, the latter involving a large approach to the whole purpose. Manuals, similarly, may be of two types.

A means of instruction for teachers generally recognized as of paramount value, is demonstration, involving both the mechanical and instructional aspects of the utilization of visual materials. Courses in visual education which use the laboratory method should include not only the handling and preparation of materials, but also demonstrations whereby students may observe how visual aids are used in teaching and to what advantage.

Another important factor upon which the question of training teachers is based, is the need for cooperative work. Such cooperation is needed among members of the faculty of an institution of higher learning, and between the institution and teachers or school systems in the field.

The greatest need, however, with respect to in-service training of teachers is for efficient supervision. This need has been well summarized by Brunstetter.[8]

> Supervision is probably the most important means of insuring the development of film-teaching skill. The initial basic training serves to give teachers a background of knowledge and understanding of the film medium, but supervision guides them as they grow in the ability to utilize the film in the classroom. Intelligent, sympathetic criticisms and suggestions, given by supervisors who have a keen appreciation of the part which audio-visual materials of instruction may play in the attainment of objectives and in the mastery of subject matter, will stimulate teachers to creative use of all the devices at their command. On the other hand, a supervisor who is either uninterested or unaware of the possibilities inherent in the working tools of the classroom may eventually dampen any enthusiasm which the teacher might generate.

One of the activities of the Committee on Motion Pictures in Education of the American Council on Education has been the initiation of several conferences on teacher training in visual education. The proceedings of the conferences held at Milwaukee and Teachers College, Columbia University, N.Y. respectively are now available in mimeographed form from the American Council on Education, 744 Jackson Place, Washington, D.C.[9-10] All the problems of teacher preparation in visual education were discussed at these meetings by persons concerned with teacher training in this field.

[8] Brunstetter, M. R. *How to Use the Educational Sound Film.* University of Chicago Press. 1937.

[9] "A Conference on Teacher Training in Visual Instruction." Report of conference sponsored jointly by the University of Wisconsin and the American Council on Education. Milwaukee, Wisconsin. November 5, 1936. Edgar Dale, chairman.

[10] "Teacher Training in Modern Teaching Aids." Report of conference sponsored jointly by Fannie W. Dunn, Teachers College, Columbia University and the American Council on Education. Held at Teachers College, N.Y., January 18, 1937. Charles F. Hoban, Jr., chairman.

The compilation that follows has been organized into sections representing different aspects of the problem of teacher guidance in visual instruction. In making these divisions, however, the editors found that some discussions covered more than one phase of the topic. Such articles have been cross-referenced wherever possible.

Some basic questions in the minds of administrators and leaders in institutions for the preparation of teachers have been the following:

1. What is the need for teacher preparation in visual education? Why, in other words, is this preparation so important?
2. What have been the trends in teacher preparation for the use of visual aids? Who has made important contributions in this field?
3. How can teachers in service be trained or guided in the use of visual aids?
4. What scope of instruction is desirable in the use of visual aids? Or, as one author expressed it, what should a course in visual instruction include?
5. What responsibility have educators in developing an appreciation of theatrical motion pictures?
6. Should courses in visual education be separate, or should guidance be offered in special methods courses?
7. What is being taught in courses in visual education?

These questions have been answered by several eminent educators, some of them pioneer leaders in the visual-education movement. It must be remembered, however, that we were limited in our quotation of opinion to such contributions as have appeared in print. It is very likely that important analyses have been omitted from this compilation, owing to the fact that they are not accessible in published form.

In some instances, it seemed desirable to review materials published some time ago. These have been included for purposes of comparison with more recent findings and to show to what extent the early proposals for the preparation of teachers have been carried out. Since the large-scale

movement for teacher training in visual education is only now beginning, the suggestions of pioneer thinkers may still be of value.

I. The Need for Teacher Preparation

One of the first requirements of administrators and teachers after they have been impressed with the need for using visual-sensory aids in the classroom is some form of guidance in handling and correlating these aids. Dorris, in her book, *Visual Instruction in the Public Schools,* considers the problem at length. A digest of her discussion will serve to introduce the subject.

Dorris, Anna V. "The Need of Teacher-Training in Visual Instruction." In *Visual Instruction in the Public Schools.* Ginn and Company. Boston. 1928. Chapter 8, p. 369-81.

Four fundamental problems briefly treated in this chapter on the training of teachers are as follows: Why should capable teachers need special training in visual instruction? Who should be trained in the technique of visual instruction in the public schools? How should teachers be trained in this new field? What should be the content of this training?

Visual instruction, as interpreted today, is a comparatively recent problem in education and involves the use and care of new, and more or less complex, materials and apparatus. The majority of teachers are still trained to use textbooks and subject matter as such in the teaching of, say, geography or history, rather than tools such as objective materials and projection apparatus.

It is essential, therefore, that teachers be given an opportunity to acquaint themselves with these new methods. Opportunities should be provided within each school system, since it is often impossible for teachers to undertake university extension courses while actually engaged in teaching.

Another urgent need is the supervision of procedures already in practice. Many schools throughout the country are equipped with visual equipment, but it is used in a haphazard fashion and with little knowledge of any definite technique. The finest tool is worthless if placed in unskilled hands.

In order that visual instruction may function educationally it is all but essential that principals and supervisors be trained as well as teachers, particularly in the proper techniques for using visual materials. When such training is required of all primary and secondary supervisors in both city and rural schools, greater efficiency will result in every department. If more administrators had a clear conception of the educational need for visual materials and their many uses, the training of the classroom teacher would naturally follow and her task would be much simplified. Administrators are greatly concerned over the choice of textbooks and their influence in the classroom; but though slides and motion pictures may be capable of wielding a far greater influence over the minds of young children than texts, their choice, both as to quality and subject matter, is often left in unskilled hands and even to laymen who do not understand public-school needs.

The training of the classroom teacher involves more intensive study than that of any other school person. Since she actually handles the material and works with the children, she must master the correct techniques. Her training, further, must be more than theory to her; it must be actual practice day after day. As teachers are usually overworked, it is suggested that extra training be made simple and interesting and that all possible cooperation be given the teacher during her training.

Various plans have been used successfully. General instructional classes, for instance, may be held by the educational head of a visual-instruction department. Such classes may meet weekly for five or six weeks with attendance optional on the part of teachers. Instruction should be given by means of lectures and demonstration lessons in the use of visual materials. According to another plan, general training for rural schools may be given through conferences with rural supervisors and through annual institute lectures and section work. Such sessions may stimulate teachers to take more comprehensive work during summer sessions at teachers' colleges and universities. Or courses may be had at teacher-training institutions. In such courses visual instruction is sometimes classed with vocational guidance, character development, or educational tests and measurement, as a new method in educational procedure.

From studies made of the extent to which visual instruction was taught in 1924 and in 1927-28, it is concluded that there is need for two types of training—one for students preparing for the teaching profession; the other to meet the needs of teachers already in service.

The way in which San Francisco State Teachers College handled the situation is interesting. This college offered a full-credit visual-instruction course for teachers to encourage and aid schools in securing equipment for a wider and more systematic use of visual instruction. The course presented good practical methods of using visual materials. Other courses were offered after school and on Saturday mornings. One of these consisted of lectures, demonstrations of all visual materials, reports of progress on individual problems, and laboratory work. Topics discussed in the lectures included the need for improving and enriching classroom work, fundamental reasons underlying the uses of visual instruction, practical pedagogical methods of procedure in the classroom, special uses and sources of supply, care and use of apparatus, how to start a distributing center, how to equip schools for visual instruction, and ways and means of earning money for equipment. The demonstration consisted of typical lessons, presented either by the instructor or by members of the group. This feature was probably the most helpful part of the course, as it showed concretely what the members were actually accomplishing in their regular classroom work under the influence of the instruction.

Another type of course offered by the State Teachers College was the field course. Upon request, the instructor visited principals and individual teachers in their schools and endeavored to give them concrete help in solving the problems that arose daily in visual instruction. Twenty-one different schools were visited at least a few times. By the end of the year, twelve of the twenty-one were fairly well equipped to carry on visual-instruction work and three had started school libraries of visual materials. Every teacher, by the time she had finished the course, had accumulated her own collection of well-mounted pictures, exhibits, charts, and graphs to use in enriching her own classroom teaching. The improvement in the atmosphere of the schoolrooms was remarkable.

An advanced course was then offered for those who wished to proceed further. Courses, using the same instructor, were

eventually offered at the University of California in Berkeley and at the State Teachers College in San Francisco. The courses are rated by the Board of Education as courses in education, and full college credit is given for their completion.

A beginners' course should treat three problems. One of these is the fundamental reason and technique for using visual instruction in classroom teaching. A consideration of this topic would necessarily include a consideration of modern pedagogy and the psychological principles on which it depends. The second problem is that of the source of supply and concerns the care and use of materials and apparatus. Each visual aid should be dealt with separately. Ample opportunity should be given students for practice in using visual materials and apparatus. This may be managed by arranging with special training-school classes for demonstration periods; or the teacher-training group may assume the attitude of a regular class while various students participate in solving definite problems by using different illustrative material and apparatus. The third problem treated should be that of enriching the curriculum by means of visual instruction. This problem is so inclusive that it is almost necessary to incorporate it into an advanced course. Thirty-six-hour courses allow scarcely enough time for adequate training in visual education. In an advanced course of thirty-six to fifty-four hours, several days may be devoted to each of the most important subjects of the curriculum.

A syllabus should be placed in the hands of students which includes an adequate bibliography on visual instruction in relation to modern pedagogy. Specialists in the field will profit by short courses in photography, electricity, graph making, and so on.

Special courses in visual instruction can be greatly simplified and shortened if instructors in educational procedure in subjects such as geography, history, and the like will include in their courses on methods the principles involved in the use of visual materials.

Hoban, C. F. (formerly State Director of Visual Education, Harrisburg, Pennsylvania) "Enlisting Visual-Sensory Aids." *Journal of Education.* 115:516-18. September 19, 1932.

Hoban gives examples of verbalism in the schools and suggests that the introduction of visual-sensory aids will do much

to correct this situation. He states: "It is my firm conviction that next to educational psychology, this visual-sensory aids course possesses greater values, from the instructional and learning viewpoints, than any other professional course in education." He points out, too, that Pennsylvania's Board of Teachers College Presidents has made a visual-sensory aids course mandatory in all the state-owned teacher-preparation institutions of that state.

A significant series of proposals was outlined in 1932 by the newly formed Department of Visual Instruction of the National Education Association. These are quoted by Hoban in another article as ample proof of the need for some form of teacher preparation.

Hoban, C. F. "Possibilities of Visual-Sensory Aids in Education." *Educational Screen.* 11:198-9, 202. September 1932. An address given before the College Section of the National Education Association at Atlantic City, June 30, 1932.

Some of the shortcomings of elementary-school instruction may be laid to verbalism. A cure may be found in the intelligent use of visual-sensory aids in the instructional and the learning processes. To use visual-sensory aids effectively, however, teachers must be familiar with these tools of teaching—where to get them and how to use them. Responsibility for the dissemination of this knowledge and technique rests with the teacher-preparation institutions of the country. An analysis, recently made of over one hundred experimental studies in the field of visual instruction, established beyond question the value of visual aids in education. This is a challenge to every superintendent and supervising official in the country.

When the National Academy of Visual Instruction and the Department of Visual Instruction of the National Education Association merged in 1932, the following declarations were made:

1. Experimental studies, research, and surveys have revealed definite and important values for visual aids.
2. A knowledge of these visual-sensory aids and a technique for their use require special preparation.

3. The contribution that visual-sensory aids make to improved instruction justifies a requirement that every teacher in training in the public schools of the United States take a laboratory course in visual-sensory aids.
4. Some means should be developed to train teachers in service in this field.

The opinion of students in this field is that the practice of offering separate visual-sensory-aid courses in each of the several subjects, such as history, science, and the like, is a mistake since such a procedure results in confusion and duplication of effort. The feeling prevails that the core curriculum of visual-sensory-aids training should consist of the following elements common to practically all subjects: research and historical background; psychological aspects and verbalism; projectors and projection; school journeys; object-specimen-models and museum procedure; pictorial materials; still-photography and motion-picture camera techniques; blackboard and bulletin-board techniques; administration and budgeting of visual material; radio-vision; bibliography.

If a course in visual-sensory aids were to be made mandatory for every person preparing to teach in the schools of the nation, if superintendents of schools were to encourage teachers in service to take such a course—either in extension or at summer schools—and if visual-sensory aids were to be used effectively in the schoolrooms of America, the next ten years would witness one of the greatest contributions to the improvement of instruction that has ever been made in the history of our country.

Hoban also expressed his opinion regarding teacher training for visual education in an address before the 1931 convention of the National Education Association. It is his contention that teacher-training institutions must assume responsibility for the adequate preparation of teachers in the use of visual aids.

Hoban, C. F. "Responsibility of Teacher-Training Institutions for the Preparation of Teachers in the Technics of Visual and Other Sensory Aids: Abstract." *National Education Association Proceedings.* 1931 :957-9.

It is necessary that teachers know the types of visual and other sensory aids, where to get them, how to evaluate them, and how to use them in the instructional process.

The Pennsylvania classification of visual and other sensory materials for teaching purposes is as follows: (1) apparatus and equipment; (2) school journey or field lesson; (3) objects, specimens, and models; (4) pictorial material; (5) miscellaneous aids, such as dramatization, demonstration, exhibit, pageant, sand table, and the like.

Schoolroom apparatus and equipment include blackboard, bulletin board, charts, globes, maps, models, pictorial files, projectors, and various other instruments and devices necessary for meaningful instruction. Modern educational procedure requires that teachers know high-standard materials, the minimum materials necessary for teaching the respective subjects, the sources from which they may be obtained, and proper methods for their effective use. Lack of this knowledge has resulted in an accumulation of inferior and unnecessary materials in many school districts.

The school journey, or field trip, is one of the richest and most practical of all educational methods. The school journey has proved so valuable that it is used throughout Germany, Great Britain, and Czechoslovakia. The London County Council has subsidized such trips and the progressive European countries are rapidly adopting them. Russia is becoming highly enthusiastic over their value.

The use of objects, specimens, and models provides for instruction in realistic and concrete elements. The object may be a plant or animal brought into the classroom; specimens may consist of a sample of coal or cloth; the model may be a small representation of a building, machine, brain, or the like. Modern schools are providing collections of such materials so that they are immediately at hand for teachers and pupils to use. Journeys to museums offer valuable experience with models.

Pictorial materials include textbook illustrations, post cards, prints, stereographs, lantern slides, and motion pictures. They appeal to the eye, attract attention, and arouse interest; but to use pictorial materials effectively teachers must not only know how to adapt them to the curriculum but must have standards for their evaluation, guiding principles for their use, and a definite technique for instructional procedure. The valuable materials that have been and are being developed make this type of visual aid of first importance.

Miscellaneous aids contribute certain definite values to instruction. These include dramatizations, demonstrations, pageants, exhibits, and sand tables—all of which make the pupil an active agent. To use them successfully requires training in their values and in the technique for their use.

Schools fall behind in the matter of attracting and holding the interest of children because teachers are not taking advantage of the new devices and aids in the presentation of content material. School administrators complain of the teachers' lack of knowledge of these values and techniques. If the quality of instruction is to be improved, and if the objectives of education are to be met, teachers must be provided with adequate preparation and a profound knowledge of the philosophy that underlies learning through the senses. The consensus of opinion is that training in the various standards for evaluating visual and other sensory aids and in the guiding principles and techniques for their use should be part of the preparation of every teacher in elementary, secondary, or special schools.

We must appeal to the teacher-training institutions to include a course in visual instruction in the professional preparation of teachers. Because of the contribution such a course makes to meaningful instruction, because such a course fits more instructional and learning situations than many of the courses now required, it ranks in my judgment next to educational psychology. We should dedicate our efforts in the year that lies ahead toward making a credit course in visual and other sensory aids a requirement for a teacher's license in every state in the union.

The opinions of several of the educators quoted in these pages, with respect to the necessity for teacher preparation in visual education, were summarized by Fannie W. Dunn in an address before the Twelfth Annual Conference of the National Board of Review of Motion Pictures in February 1936. This address, entitled "Teaching Visual Instruction," was published in the March 1936 issue of the *National Board of Review Magazine.*

The need for teacher preparation and a variety of procedures for meeting this need were set forth by Edgar Dale at a recent meeting of the Department of Visual Institution

of the N.E.A. in New Orleans. These have been outlined below.

Dale, Edgar (Ohio State University, Columbus, Ohio) "Progress in Teacher Training in the Use of Visual Aids." *Educational Screen.* 16:81-4. March 1937.

The training of teachers to use visual aids effectively may be afforded in several ways. First, there is the training offered by teacher-training institutions either through a separate course (required, or elective), or through units on visual aids in special methods courses. Another important form of teacher preparation, and one which will influence the teacher-in-training in her own teaching techniques, is the widespread use of visual materials by college instructors. Such use, however, should be meaningful and integrated. When motion pictures or slides are used in college in a careless, non-integrated fashion, the student will reflect this attitude in her teaching career.

Each teacher-training school should provide some kind of instruction in visual aids for the prospective teacher. It is important, too, that the schools provide equipment and materials to meet the needs of each teacher.

Another form of teacher education which has been much neglected is in-service training. This may be provided through various channels: (a) through teachers' institutes such as have been held at state universities in Ohio; (b) through guidance by directors of visual education in city school systems; (c) through national, state, and regional meetings of visual education groups, and through a discussion of the problems of visual education by specialized professional groups, such as the Women's Physical Education Association, and others; (d) through committees of teachers to evaluate available films in their special subjects; and (e) through the cooperation of classroom teachers in the production of educational films.

A third and very important method of teacher training is through printed materials. Here, too, the information may be published in a magazine devoted exclusively to visual education, such as *Educational Screen,* or the *News Letter,* published at Ohio State University; or it may appear at frequent intervals in the numerous subject-matter journals of the teaching profession. The information being compiled and disseminated through

the American Council on Education will also be invaluable to teachers in service.

Another method of teacher training which offers a good deal of promise, is to give graduate and undergraduate college students an opportunity to develop special abilities in the field. Such activities as producing independent motion pictures, cooperating with various departments of the college in the production of films, participating in psychological research dealing with visual aids, or conducting a survey of the status of materials and equipment provide excellent training for prospective directors of visual education.

A final type of teacher-training is furnished by courses in motion picture appreciation. Such guidance is helpful to the teacher-in-training, as well as to the teacher-in-service.

II. Trends in Teacher Preparation

Trends in visual-education guidance before 1925 have been summarized in the article—one of a series—by F. Dean McClusky. McClusky believes that the inadequacy of teacher guidance in many city school systems may be charged to the numerous outside duties laid upon the directors of visual education.

McClusky, F. Dean (Director, Scarborough School, Scarborough-on-Hudson, New York) "Finding the Facts of Visual Education: II. Growth Through Teacher Training." *Educational Screen.* 4:203-5, 272-6. April, May 1925.

Until teacher training in visual instruction is developed, the market for visual aids will move slowly. Growth in visual education depends on the training of teachers, which in turn depends on the development of college instruction, textbooks, and courses of study for visual instruction. Lack of understanding of this factor by commercial companies distributing visual aids has caused much waste of time and effort.

There is evidence that in a few instances directors of visual instruction in educational institutions have not been able to give attention to the promotion of an adequate program of teacher

training. The directors of visual instruction in Berkeley, Cleveland, Newark, New York, Philadelphia, and Pittsburgh, were found in a recent investigation [11] to have numerous outside duties which made provision for teacher training negligible. Extension departments that have undertaken to distribute films and slides have become aware of the need for teacher training in the use of these aids.

Progress in teacher training was evident, however, the survey showed. In over twenty institutions [1923] courses in visual education were being offered, usually in the summer session; conferences of teachers of visual instruction were being held at the Universities of Missouri and Utah; the State Department of Education in Michigan was giving a series of short courses in the normal schools of the state; a small number of city normal schools offered similar courses; a number of city school departments of visual education were making serious efforts to train teachers in service in the technique of visual instruction.

Teachers may secure training in visual instruction in formal, semiformal, and informal ways. In the formal method, instruction is gained through courses in institutions of learning; in the semiformal, at teachers' institutes and from short courses; in the informal, through such vicarious means as lectures or scattered reading.

The visual-education instruction offered as formal training comprises resident and extension courses, summer- and regular-session courses, and prescribed, elective, and noncredit courses. Semiformal training may be afforded by teachers' institutes, short courses, systematically arranged conferences, a lecture series, or methodical supervision. There is considerable opportunity to gain information by the informal method through newspapers, radio, the theater, and advertising. Methods usually include the reading of magazine articles, listening to occasional lectures on visual education, observing demonstrations of visual materials, reading books, and listening to salesmen of commercial products in the field.

The growth of visual education is in no small degree due to the spread of information by informal methods. The desire of advertisers to place before school people a considerable amount of information on visual materials has been especially influential.

[11] A survey made by McClusky in 1923 for the Committee on Visual Education of the National Education Association.

Informal training will not, however, develop so lasting an interest as is gained through formal or semiformal methods.

Formal instruction. The National Academy of Visual Instruction found in 1924 that twenty-three educational institutions were offering courses. These constitute but a small percentage of the teacher-training institutions in the United States, but they include some of the finest. The courses offered are all elective, not prescribed. In three institutions they are given by correspondence or in extramural classes; the majority are offered only in the summer session.

Semiformal instruction. Semiformal programs should supplement the core of formal courses. Teachers in service should be kept informed on the subject. In Michigan, a short course was set up in 1923 in each of the normal schools of the state under C. J. Primm of the Michigan State Department of Public Instruction. These courses aimed to acquaint pupil teachers with the theory and techniques of using films in teaching; the sources and care of films; and how to operate and care for a motion-picture projector. The courses carried no credit, but a certificate was awarded. There were eight lectures for each course and six courses daily. Individual coaching in handling projectors was provided on request and all teachers in adjacent areas were invited to attend round-table discussions on Saturdays.

Another desirable type of semiformal training was afforded in several instances through teachers' institutes. The directors of visual instruction in Berkeley, Detroit, Newark, and Kansas City have been active in organizing conferences and committees of visual education in their respective cities.

Informal training. Information gained in this way is loose, distorted, and undesirable. If the development of visual instruction lies in teacher training and if the way to train teachers most rapidly is through prescribed courses, it would appear that the establishment of such courses is fundamental. This is difficult to accomplish, however, when the program in teacher-training institutions is already overcrowded. "The solution does not lie in directors of special courses, but rather in that of incorporating into the already existing prescribed courses in methods, the treatment of the topic visual instruction as part of those courses." Formal courses should be continued as electives, except in the case of students who want to become specialists.

As early as 1922 a survey was made showing the provision made at that time for teacher preparation in the use of visual aids. The results were reported in an address by Anna V. Dorris before the Visual Instruction Conference of the National Education Association at Oakland, California, in July 1923.

Dorris, Anna V. "The Training of Teachers for Service and During Service in the Use of Objective and Other Visual Materials." *Educational Screen.* 2:335-7. September 1923.

The report presents the results of a survey of the provisions made in the United States in 1923 for the training of teachers in the use of visual materials.

An inquiry was sent to 171 normal schools and to 114 colleges and universities. There were thirty returns from the former and thirty-seven from the latter. Among normal schools, four offered regular courses in visual instruction and two offered summer-session courses. The Michigan Normal School offered one noncredit course. One normal school taught "graphs"; another gave a course on photography and slide making.

Colleges and universities gave more attention to the distribution of slides and films than did normal schools. Seventeen of the thirty-seven colleges and universities reported that they maintained distribution centers. Only four normal schools reported such service. The main use of these distributing centers, however, appeared to be for the circulation of visual material for entertainment purposes.

Some schools in which courses were not offered reported using visual aids in the teaching of science and geography. One teachers' college thought their art course would come under the head of "visual instruction."

A number of questions arise from the findings of the survey: is it justifiable to allow teachers already in service to go on in the old traditional way? Shall no provision be made by teacher-training institutions for teachers in service to learn how to use newly installed equipment with the least expenditure of time and energy?

[An account of the work offered in the San Francisco State Teachers College follows. This has been described in detail

elsewhere (see page 378). Briefly, it includes (a) classroom lectures and demonstrations, and (b) field work.]

Much material had been accumulated in the Berkeley schools. A committee was organized to prepare a handbook,[12] demonstration lessons were given before teachers, and finally a visual-instruction center with a part-time director and an attendant was set up.

The report of a committee on teacher training in visual instruction submitted to the Department of Visual Instruction of the National Education Association in 1926 suggests that a separate laboratory course is needed for pupil teachers, and extension courses for teachers in the field.

Ankeney, J. V. (Chairman) "Report of Committee on Teacher Training in Visual Instruction." *Educational Screen.* 5:489-91. October 1926.

A survey made in 1925-26 showed that several institutions were offering teacher-training courses, with the University of Wisconsin assigning a professorship to the subject.

Visual education is concerned with two well-defined problems: (a) that dealing with the selection and construction of visual aids; (b) that dealing with correct or better methods of using aids. The question of how these problems may be approached is controversial. Should visual education be introduced in courses in other subjects, such as geography education, history education, and the like, with no additional staff but with proper correlation with the subject under consideration? Or should visual education be presented in a separate course, given by a specially trained instructor?

The arguments for the latter view are: (1) Not all teachers of special methods have had experience in training student teachers in the use of visual aids. (2) Special methods courses are overcrowded and leave little time for ample consideration of visual instruction. (3) Teachers in service are in need of supplementary training for that subject. (4) Visual instruction needs one person responsible for training in methods and materials, or little will be accomplished. (5) Separate courses are

[12] *Visual Instruction.* Course of Study Monographs. Public Schools, Berkeley, California. 1923.

temporarily justified to develop an awareness of the need for visual aids properly used.

Skill in the use of visual aids may be developed by demonstration lessons given under actual teaching conditions to "set a pattern," followed by a discussion as to why this procedure was used, and finally by practice teaching under supervision using visual aids and follow-up discussion. This last step, involving actual participation, is most desirable; "reading about" or "talking about" the use of visual aids will not quickly modify practices of young inexperienced teachers.

In-service teachers may be assisted by summer-session courses, such as a separate course in materials and methods; a special methods course; a teachers' institute, or round-table demonstration and discussion. Helpful, also is supervisory assistance whereby demonstrations and illustrated source lists and bibliographies are made available.

Proceeding to more recent judgments on the problem of teacher preparation, we note that the State of New Jersey has shown interest in the question, although it has not as yet made courses in visual education compulsory as did its neighbor state, Pennsylvania. The New Jersey Visual Education Association, part of the State Teachers' Association, publishes the proceedings of its annual meetings. In the bulletin for the 1935 meeting, there were two addresses regarding the need for teacher guidance in the use of visual aids. Crawford favors the view that unless a teacher has been trained to observe intelligently through field trips, laboratory courses, pictorial aids, and the like, she cannot be expected to teach children to do so. The responsibility for her training, Crawford feels, rests with normal schools.

Winchell likewise deplores the failure on the part of teacher-training institutions to offer visual-education preparation. He urges that school administrators encourage teachers in service to enrich their backgrounds by taking special methods courses.

Crawford, E. Winifred (Director of Visual Education, Montclair, New Jersey) "Some Significant Values of Visual Education in the Training of Teachers." *New Jersey Visual Education Association.* 1:17-19. November 1935.

One thing needed by young people who are preparing themselves for teaching is a feeling for life—a "precious seeing." It is easy to look, to touch, to hear, to let one's senses be casually conscious of what comes to them. To look deeper, to be silent, to compare, to think so that values, causal relationships, interpretations, and appreciations are realized to an increasing extent, is the precious seeing that knowledge adds to the eye and other sensory organs. It is this that visual education in its broadest aspects unfolds to students who are trying to have seeing eyes, listening ears, and sensitive touch.

The field trip, the laboratory, the drama, the pictorial aid, the symbolic aid—all offer opportunity for seeing and interpreting the more significant values of life.

Courses in visual education in an institution for teacher training aim to open to the student teacher this door to sincere thinking and deep feeling so that they may do the same for their future pupils. When this purpose in the use of visual and other sensory aids is felt, the student will be eager to investigate the technical side. The findings of research studies are accordingly considered and a study is made of the significant value of each of the aids and of the sources from which it may be obtained. Methods of selection, standards of evaluation, and principles underlying the use of aids in relation to units of work, creative activities, school subjects, clubs, and assemblies, are tentatively formulated. The students will be anxious to know how to use the field trip, the laboratory, dramatics, plastics; they will wish to take still and motion pictures; to make slides, properties, and many other aids; to operate and care for stereopticon, film slide, opaque, and silent and sound motion-picture projectors.

A study of the photoplay is being included in the curriculum or club activities of an ever increasing number of high schools. Visual education, in conjunction with English and art, can help student teachers to evaluate and interpret the photoplay for themselves and teach them how to approach the subject with high-school groups.

Winchell, Lawrence R. (Superintendent of Schools, Vineland, New Jersey) "The Need of Teacher Training in Visual Education." *New Jersey Visual Education Association.* 1: 15-16. November 1935.

If visual instruction is to keep pace with the modern school program, we must provide opportunities for teachers who seek to improve their techniques in this field. Our normal schools and colleges have recognized the fact that teachers should be trained in the proper use of subject matter and textbooks, but practically nothing is being done to train teachers in the proper use of tools such as objective materials and projection apparatus. In a nation-wide survey of visual equipment, it was found that in some instances this apparatus stands idle and dusty from lack of use. The condition will not be remedied until the average teacher in service has an opportunity to learn of the newer and better methods of teaching. Ways and means must be provided by administrators and supervisors for teachers to take special courses in methods of using visual aids.

It will readily be agreed that a course in visual education should deal primarily with the actual technique of using visual aids in the various phases of teaching and in the various school subjects of the elementary and secondary schools. By technique is meant pedagogical, not mechanical, technique. Attention should be given in any course to the mechanics of visual instruction, but it is scarcely necessary for every teacher to know how to manipulate a motion-picture machine. Every teacher should, however, know how to handle a classroom stereopticon and should know enough of the laws of optics and electricity to be able to meet emergencies.

E. E. Macy, in a recent article, reiterates the need for teacher preparation. He advises teachers to educate their administrators, and administrators to educate school boards. School boards, in turn, should convince the taxpayers that skilled teachers, aided by adequate equipment and materials, will make the educational process worth while.

Macy, E. E. (Director of Visual Education, Indian School, Warm Springs, Oregon) "Training in Visual Education." *School Executive.* 54:206-7. March 1935.

Are teachers properly trained to use visual aids intelligently? In a recent investigation in Chicago, an average gain in achievement of 24 per cent was shown as a direct result of the use of visual aids. The development of visual education is often hindered, however, by enthusiastic but unintelligent use of visual aids by teachers who are unfamiliar with the proper use of such equipment. Such misuse will not be of much benefit to the pupil. Then there are those teachers who do not even seem interested in visual aids and make no attempt to correlate them with classroom work. The best results in visual education will be attained through the intelligent use of visual aids in the classroom and through the intelligent selection of proper type of material.

Among the causes of difficulty for teachers are lack of training in music and dramatics, dearth of teaching materials, and training in passive rather than dynamic methods of organization. Teachers who want to be successful and progressive should master a wide range of visual aids, should use them naturally, let the individual pupils select vital points, provide for reciprocal pupil effort, cultivate an open mind, note uses of aids in other lines, and lead pupils to note values of different aids.

Some desirable topics for teacher training are the following: field trips; diagrams; maps; display racks; scrapbooks; bulletin boards; magazines; newspapers; construction; collections; replicas, models; relics; specimens; objects; statuary; phantoms; local history; clubs; pageants; special days; dramatizations; pioneer clubs; posters; charts; graphs; types of equipment; exhibits; cartoons; congresses; library; blackboards; stereographs; chalk skill; museums; motion-picture cameras; 16 mm. and 35 mm. projectors; slides; film-slide and opaque projectors; micro-cinematography; samples; sources of free materials; daylight projection; screens; films—silent, sound, and still; homemade slides—cellophane, typed, glass, and film; mechanics of projection—lenses, mirrors, electrical devices.

Progressive teachers should educate their administrators, school boards, and others, to the need for teacher training in visual education; administrators should educate teachers, pupils,

and school boards to the point where they will demand teacher training. Taxpayers should also require this training in the school systems.

At a spring conference of the Visual Aids Section of the California Teachers' Association, it was decided that a promotional program for teacher training should be planned. The abstract which follows describes the plan in full.

White, Margaret S. (Pasadena) and **Irion, Mary Clint** (Los Angeles) "News Briefs from California." *Educational Screen.* 11:143. May 1932.

The Visual Aids Section of the California Teachers' Association, Southern Section, adopted a program of teacher training as its main objective at the spring conference in 1931. The development of the program has been put in the hands of a committee known as the Committee on Teacher Training of the Visual Aids Section, California Teachers' Association, with Mary Clint Irion as chairman.

The committee decided upon certain preliminary procedures. These were:

1. To ascertain from deans of education, presidents of teachers' colleges, and other administrators, just what is being done throughout the United States, and in California in particular, to train teachers in this field. The following questions were to be asked by letter or interview:

> Is any training given in the use of visual aids to your teachers in training, or through extension courses to teachers, supervisors, and administrators in service?
>
> If so, does this training pertain to the pedagogical application of the various types of aids, or does it refer to mechanical problems, or both?
>
> If you have any such courses, will you send us a copy of the syllabus of the course?
>
> Do you expect to do anything further than you are now doing in this field?
>
> Is it your belief that any further training than teachers now have is necessary?

2. To secure through personal interviews the advice and cooperation of the educational leaders close at hand.

3. To submit to the various publications in the field accounts of successful experience in the use of visual tools and articles of interest regarding the work of the committee.

4. To prepare a bibliography of visual aids for the use of instructors in teacher-training institutions who might wish to inform themselves more fully in this field.

5. To consider the preparation of a handbook on visual aids.

6. If the results of our survey so justify, to present to the State Board of Education a plea for the inclusion of training in the use of visual aids in the curricula of California teachers' colleges.

7. To be prepared to furnish definite help to teacher-training institutions on request.

The outstanding need for teacher preparation in the use of visual aids was pointed out in a survey conducted by the American Nature Association in 1930. It was then noted that although visual aids are used universally and although many teacher-training institutions possess projection equipment, there is no provision for the training of teachers of nature study in handling this equipment.

McNall, Jessie J. (New York State Normal School, Potsdam, New York) "Study of Content and Organization of Materials Offered in Teacher-Training Institutions Together With An Examination of Methods Used in Visual Education." *Nature Almanac.* 1930:132. American Nature Association.

This study of the content of courses offered in normal schools and teachers' colleges in nature study or elementary science covered subject matter, manner of presentation, and equipment used in class work. It was thought that a survey of the physical equipment available for use in teacher-training institutions might throw some light on activities in progress in nature education.

Replies were received from 108 institutions, representing all the states except Alabama, Arizona, Colorado, Delaware, Mississippi, Montana, Nevada, New Mexico, New Hampshire, Utah, Vermont, and Wyoming.

Type of Visual Aid	*Number of Schools Equipped*
Lantern slides	65
Motion-picture equipment	35
Photographic equipment	28
Models and model-making equipment	27
Reflectoscopes	23
Stereographs	17
Sound-film equipment	0

Fresh living things seemed to be most commonly used as equipment in nature study. Charts, pictures, preserved material, and slides were all used to an equal extent. There seemed to be comparatively little teaching in this field without visual aids. This may account for the fact that one nature teacher, who claimed to be "naturally gifted with the ability to speak" and who testified that he relied essentially upon this ability to succeed, is no longer on the teaching staff of which he was once a prominent member.

Ten schools reported that all their graduates were trained in the use of a stereopticon. It appears that few teachers are as yet trained in the use of the machines that promise to do so much to revolutionize educational method. Very few, apparently, are taught anything about the operation and care of the 16 mm. motion-picture equipment that is becoming so popular and is so splendidly supported by useful educational films.

In all fairness, however, it should be stated that there are many educational institutions offering courses for teachers in the use of visual aids. The list which follows gives ample evidence of the extent to which such courses are to be offered during the summer of 1937.

"Summer Courses in Visual Instruction." *Educational Screen.* 16:152-3. May 1937.

INSTITUTION	COURSE	INSTRUCTOR
Alabama		
Alabama Polytechnic Institute (Auburn)	Visual Instruction	M. L. Beck
California		
Univ. of So. Calif. (Los Angeles)	Fundamentals of Motion-Picture Production and Motion-Picture Story and Continuity	B. V. Morkovin
	Social Psychological Aspects of Motion Pictures	M. Metfessel
	Audio-Visual Education	Sarah Muller
	Methods of Teaching the Use and Appreciation of Educational Films and Radio Programs	Sarah Mullen
State College (San Francisco)	Photography	S. Morse
Colorado		
State College of Education (Greeley)	Visual Aids in Education	Helen Davis
Univ. of Colorado (Boulder)	Visual Aids	Lelia Trolinger
	Education Through Motion Pictures	Lelia Trolinger
Univ. of Denver (Denver)	Visual and Auditory Aids	E. H. Herrington
Florida		
Univ. of Florida (Gainesville)	Visual Education	W. L. Goette
Georgia		
Univ. of Georgia (Athens)	Visual Aids in Education	T. R. Wright
Illinois		
Northwestern Univ. (Evanston)	Visual Aids and Radio in Education	Paul C. Reed
State Normal Univ. (Normal)	Visual Education	C. L. Cross
Univ. of Illinois (Urbana)	Visual and Auditory Instructional Aids	Louis Astell
Indiana		
Purdue Univ. (Lafayette)	Visual Education	H. A. Henderson
Iowa		
Iowa State College (Ames)	Lecture—Discussions on Visual Aids	H. L. Kooser

INSTITUTION	COURSE	INSTRUCTOR
Kansas		
Univ. of Kansas (Lawrence)	Visual Education in Elementary and Secondary Schools	Fred Montgomery
Univ. of Wichita (Wichita)	Visual Sensory Aids in Teaching	W. A. Bonwell
Kentucky		
Univ. of Kentucky (Lexington)	Visual Instruction	Louis Clifton
Maryland		
Univ. of Maryland (College Park)	Visual Education	Henry Brechbill
Massachusetts		
State Teachers College (Fitchburg)	Visual Aids in Education	C. W. Erickson
Minnesota		
State T. C. (Moorhead)	Supervision Through Visual Aids	C. P. Archer
State T. C. (Winona)	Visual Instruction	Ella C. Clark
Missouri		
Teachers College (Kansas City)	Methods in the Use of Visual Aids	Rupert Peters
New Jersey		
State Teachers College (Montclair)	Visual Instruction	E. W. Crawford
State Normal College (Trenton)	Visual Instruction	Geo. W. Wright
Rutgers University (New Brunswick)	Visual Instruction	L. R. Winchell
New York		
New York Univ. (N. Y. C.)	Visual and Auditory Materials in the Social Studies	D. C. Knowlton
	Laboratory Course in Visual Aids	John Shaver
	Practical Applications of Visual Aids	John Shaver
Teachers College, Columbia Univ. (N. Y. C.)	Materials and Methods in Visual and Auditory Education	Fannie W. Dunn V. C. Arnspiger C. M. Koon
	and	
	Research in Visual and Auditory Education	Fannie W. Dunn V. C. Arnspiger C. M. Koon
Chautauqua Summer Schools (Chautauqua)	Laboratory Course in Visual Aids	G. H. O'Donnell

INSTITUTION	COURSE	INSTRUCTOR
Ohio		
Ohio State Univ. (Columbus)	Visual Aids	Edgar Dale
Western Reserve Univ. (Cleveland)	Institute of Visual Education	W. M. Gregory and others
Oklahoma		
A. & M. College (Stillwater)	Visual Education	J. C. Muerman
Texas		
Univ. of Texas (Austin)	The Use of Visual Aids in Education	B. F. Holland
Wisconsin		
State Teachers College (Platteville)	Visual Instruction	V. M. Russell
State T. C. (Stevens)	Visual Education	C. D. Jayne
Stout Institute (Menomonie)	Visual Instruction	Paul Nelson
Univ. of Wisconsin (Madison)	Visual Instruction	J. E. Hansen
Univ. of Wyoming (Laramie)	Radio and Visual Education	Cline M. Koon

Pennsylvania

The following teacher-training institutions will give courses in Visual Education. As complete information was not available . . . we present only a partial list of instructors. . . .

Albright College (Reading)
Allegheny College (Meadville)
Beaver College (Jenkintown) (J. E. Malin)
Bucknell University (Lewisburg)
College Misericordia (Dallas)
Drexel Institute (Philadelphia) (Mr. Galphin)
Elizabethtown College (Elizabethtown) (E. Wenger)
Geneva College (Beaver Falls)
Gettysburg College (Gettysburg)
Grove City College (Grove City)
Immaculata College (Immaculata)
Juanita College (Huntington) (Paul Rummel)
LaSalle College (Philadelphia)
Lehigh University (Bethlehem)
Marywood College (Scranton) (S. M. Sylvia)
Mercyhurst College (Erie)
Muhlenberg College (Allentown) (H. E. Miller)
Pennsylvania State College (State College) (H. E. Thompson and J. G. Sigman)
Rosemont College (Rosemont)
Seton Hill College (Greensburg)
St. Thomas College (Scranton)
Susquehanna Univ. (Selinsgrove)
Temple Univ. (Philadelphia) (J. T. Garman)
Thiel College (Greenville)
Univ. of Pennsylvania (Phila.)
Univ. of Pittsburgh (Pittsburgh) (E. E. Sechreist)
Villa Maria College (Erie)
Villanova College (Villanova)
Washington & Jefferson College (Washington)
Waynesburg College (Waynesburg) (C. O. Riggs)

State Teachers Colleges at:
Bloomsburg
California
Clarion
East Stroudsburg
Edinboro
Indiana (W. E. Emmert)
Kutztown
Lock Haven
Mansfield
Millersville
Shippensburg
Slippery Rock
West Chester
Cheyney Training School

Further evidence of trends in the visual-education movement among teachers may be drawn from the News Notes printed in the *Educational Screen* during 1935. The list given here is not intended to be complete, but merely indicative of trends.

The Massachusetts Branch of the Department of Visual Instruction Presents Annual Program. (14:15. January 1935)

Texas State Visual Section Meets. The Visual Instruction Section of the Texas State Teachers Association held its regular annual meeting at Galveston, November 29-December 1, 1934. (14:14. January 1935)

Winter Meeting Next Month. The Department of Superintendence meets in Atlantic City during the latter part of February and the Department of Visual Instruction has

selected February 25 and 26 as the dates for its sessions. (14:14. January 1935)

Summer Meeting of the Department. The sessions of the Department of Visual Instruction of the National Education Association will be held in the Auditorium of the Women's Club July 1st and 2nd. (14:132. May 1935)

Chicago Branch Spring Meeting. The Metropolitan-Chicago Visual Education Association held its spring meeting Saturday, April 13th. (14:132. May 1935)

Meeting of the Department of Visual Instruction, Denver, July 1-2, 1935. (14:163. June 1935)

Annual Spring Meeting of New Jersey Group. The New Jersey Visual Education Association exhibit and demonstration. . . Friday evening, May 24th, attracted visitors from far and near. (14:163. June 1935)

World Educators Recognize Film Values. The World Federation of Education Associations, meeting in Oxford the past month, attracted 2,000 foreign educators. . . . Visual Education came in for a large share of consideration. (14: 189. September 1935)

Illinois Teachers Hold Film Conference. (14:189. September 1935)

Visual Education on National Association Program. The thirty-second annual meeting of the National Association of Teachers in Colored Schools, held July 30-August 2 at Tallahassee, Florida, included . . . two afternoon programs by the Department of Visual Instruction. (14:189. September 1935)

Massachusetts Visual Education Round Table. "Visual Aids in Education" was selected as one of the major topics of this year's conference of the State Teachers Colleges and Teacher Training Schools of Massachusetts at Bridgewater September 4, 5, and 6. (14:190. September 1935)

Indiana and Ohio Visual Meetings. The half-day session of the Visual Instruction Section of the Indiana State Teachers Association, held in Indianapolis on October 17, attracted a large attendance.

The Central Ohio Teachers Association met for their Sixty-Sixth Annual conference in Dayton, Friday and Saturday, October 25th and 26th. (14:264. November 1935)

Material for Motion Picture Appreciation Courses. The University of Southern California, Columbia University Teachers College, New York University, Colorado State Teachers College are among the score of universities that have already successfully instituted these courses. (14:272. November 1935)

III. How Can Teachers in Service Be Trained Or Guided in the Use of Visual Aids?

A. *By In-Service Teacher-Training Projects, Extension Courses, and Institutes*

The following references might be consulted for a description of this type of teacher guidance:

"A Conference on Teacher Training in Visual Instruction." American Council on Education. Washington, D.C. 1936. mimeo. The proceedings of a conference sponsored jointly by the University of Wisconsin and the American Council on Education, with Edgar Dale as chairman, November 5, 1936.

"Teacher Training in Modern Teaching Aids." American Council on Education. Washington, D.C. 1937. mimeo. The report of a conference sponsored jointly by Fannie W. Dunn of Teachers College, Columbia University, and the American Council on Education, with Charles Hoban as chairman, January 18, 1937.

Brunstetter, M. R. *The Organization of an Audio-visual Instruction Program.* Erpi Picture Consultants, Inc. New York. 1934.
A plan proposed for the use of educational talking pictures in the Derry Township Schools, Hershey, Pennsylvania.

Dorris, Anna V. *Visual instruction in the public school.* Ginn and Company. Boston. 1928. (See page 376)

McClusky, F. Dean. "Finding the Facts of Visual Education: Growth Through Teacher Training." *Educational Screen.* 4:203, 272. April, May 1925. (See page 385)

"New Approaches to Education Through Materials of Instruction." Subcommittee on Teacher Education, Committee on Motion Pictures in Education, American Council on Education. 1937. mimeo.

"Program for Peoria County Institute on Visual Education." *Educational Screen.* 2:117. March 1923.

"Teachers' Institute on Visual Education." By One Who Was There. *Educational Screen.* 2:31. March 1923.

B. *By Special Monographs or Handbooks*

Aughinbaugh, B. A. *Descriptive Catalog of Slides and Films.* State Department of Education, Columbus, Ohio. 1935. p. 91-104.

Aughinbaugh, B. A. *Visual Instruction Bulletin.* State Department of Education. Columbus, Ohio. 1926.

Committee on Visual Aids in Education. *Report on Visual Aids in Education.* Department of Education. Belmont, Mass. 1934. 24 p. mimeo.

"**Course** of Study in Visual Education." Board of Education. Detroit, Michigan. 1926.

Dale, E. and **Ramseyer, L. L.** *Teaching with Motion Pictures: A Handbook of Administrative Practice.* American Council on Education. Washington, D.C. April 1937.

Dent, Ellsworth C. *Audio-visual Handbook.* Society for Visual Education. Chicago. 1937. rev. ed.

Dorris, Anna V. (Chairman) *Visual Instruction: Course of Study for the Elementary Schools, Including Kindergarten and First Six Grades.* (Course of Study Monographs, No. 7) Elementary Schools. Berkeley, California. 1923.

Dunn, F. W. and **Schneider, Etta.** "Activities of State Visual Education Agencies in the United States." *Educational Screen.* 14:99-100, 126-7, 158-61. April, May, June 1935.

Gilbert, A. E. *A Preliminary Handbook of Visual Instruction.* Board of Education. Schenectady, New York. 1927.

"**Handbook** for the Use of Visual Aids in Elementary and Junior-Senior High Schools." (Bulletin No. 18) Board of Education. Pittsburgh, Pennsylvania. 1929.

Hansen, J. E. *Visual Instruction in Our Schools: A Handbook for Teachers, Principals, and Superintendents.* Bureau of Visual Instruction, University Extension Division, University of Wisconsin. Madison (no date). 19 p. mimeo.

Hays, Dudley G. and **McAndrew, William.** *Suggestions on Visual Aids for Principals and Teachers.* Board of Education. Chicago, Illinois. 1924.

"**Types** of Visual Aids and Projectors for Classroom Use." (Superintendent's Bulletin, Course of Study Series, No. 127) Oakland Public Schools. Oakland, California. 1930.

Visual Aids Division, Committee on Educational Progress, New York State Association of Elementary Principals. *Visual Aids in the Schools: A Report of Present Uses and Suggestions for Improvement* (1935). Apply to R. W. Thompson, Conkling School. Utica, New York.

Unzicker, Samuel J. (Chairman) Visual Education Committee, Wisconsin Education Association. *Visual Education: Report to the 1935 Representative Assembly.*

"**Visual** Education: Object-Specimen-Model and a Blackboard Technique." (Educational Monograph, No. 8) Pennsylvania Department of Public Instruction. Harrisburg. 1929.

"Visual Education and the School Journey." (Educational Monograph, No. 6) Pennsylvania Department of Public Instruction. Harrisburg. 1930.

Handbooks which accompany educational motion pictures provide valuable material for directing teachers in the proper use of the films. A discussion of the effectiveness of this type of guidance is found in the article by J. A. Lauwerys, lecturer and tutor in the Institute of Education at the University of London, entitled "How to Use Classroom Films: Handbooks to Aid Teachers." *Sight and Sound.* 4:190. Winter 1935-36.

C. *By Suggestions Incorporated in Elementary or Secondary Courses of Study*

The most logical place for guidance in the use of visual aids would appear to be the course of study for each school subject. Visual aids are not to be used separately but as an integral part of the classroom work.

The California State program for elementary science instruction provides for a Committee on Visual Aids in Education to formulate a definite visual aid program, and a Planning Committee which, among other duties, coordinates the use of visual aids and the science program.[13]

The extent to which current courses of study in geography provide teacher guidance in the use of pictures or other illustrative material has been carefully analyzed by Beutel in her master's thesis. It is interesting to note that several of the state courses of study that fail to mention sources of illustrative materials are issued by states maintaining a central library of films and slides in the state university.[14]

[13] Pickwell, Gayle. "Visual Aids and the Science Program in California." *Visual Review.* 1937:10-14.

[14] For a list of states having a department of visual instruction, see Koon, C. M. *Sources of Educational Films and Equipment* (Circular 150). United States Office of Education. Washington, D.C. 1936.

Beutel, Lucille Ethel. "Guidance for Teachers in the Use of Pictures Afforded in Courses of Study in Geography." M. A. Thesis, University of Chicago. 1932 (Unpublished)

Purpose of the study: To extract from representative current courses of study in geography all material concerned with pictures and their use and to analyze it to discover (1) the various phases of guidance for teachers in the selection and use of pictures, (2) the relative emphases on such phases of guidance as were found, (3) any tendencies discernible in the courses in the distribution of emphasis on various phases of guidance, and (4) insofar as standards for judging values were available, the relative value of different types of suggestions given.

Ninety-nine courses of study in geography were used in the investigation. Included in this total were forty-five state courses and fifty-four courses published by cities and towns. All the states in the Union from which a geography course of study was available were represented, with the exception of Rhode Island, Ohio, and South Dakota; also represented were cities from nearly all sections of the country with populations ranging from less than ten thousand to over one million. All courses of study published within the last ten years were examined. Courses found to offer a great deal of guidance in the use of pictures were Baltimore, Boston, Cincinnati, Cleveland, Lakewood (Ohio), Springfield (Missouri), Trenton, and Wichita.

The courses of study were analyzed for the following types of guidance: Were teachers afforded any *bases for selection* of illustrative material, such as geographical quality, mechanical quality, or fitness for unit? What *kinds* of illustrative materials were mentioned; e.g., pictures, stereographs, slides, or moving pictures? What type of *objectives* were offered for using these materials; e.g., enrichment, or the development of general abilities and attitudes, or the development of specific picture-reading and evaluating abilities? What types of *teaching procedures* were mentioned, such as handling, general directions for use, the purpose or place of use, or specific aid in use? What suggestions were offered regarding *pupil activities* with pictures, such as collecting and filing, general activities, or specific activities? Were specific or general *sources* given and how did state courses of study vary in this respect from city courses? Were the suggestions for use of pictures *distinctively geographic* in nature, or were they generally applicable?

The figures for the above-mentioned aspects have been given in a series of tables. Following is Table II, which gives the percentage of all comments relating to the six major types of guidance.

Types of Guidance	City Courses	State Courses	All Courses
1. Bases for selection	1.6	.1	1.7
2. Kinds	31.5	12.5	44.0
3. Objectives	3.1	2.1	5.2
4. Teaching procedures	9.7	2.3	12.0
5. Pupil activities	15.9	8.4	24.3
6. Sources	10.7	2.1	12.8
	72.5	27.5	100.0

Significant facts to be noted from this table are the following:

1. Comments on picture guidance in the fifty-four city courses are more than 2.6 times as numerous as are such comments in the forty-five state courses.

2. In the city courses, state courses, and all courses examined, *bases for selection* receive least comment, *kinds* receive most comment, and *pupil activities* next most.

3. Comments on *teaching procedure* rank third in percentage in the state courses and fourth in city courses; those on *objectives,* fourth in state courses and fifth in city courses; and those on *sources,* fifth in state courses and third in city courses.

4. In view of the fact that comments classified under *kinds* were those that merely named general types of illustrative material without giving any indication of why, when, and how they should be used, it would seem that chief emphasis is being directed to a phase which does not warrant so large a proportion of attention.

5. In making comparisons of number and percentage of comments of each type, one should realize that adequate emphasis upon *bases of selection, objectives,* and *general kinds of guidance* would require, in all, fewer comments than would adequate emphasis on *specific pupil activities, teaching procedures,* and *sources.* Measured in this way, the relatively small emphasis on objectives and bases for selection may be adequate.

The following general conclusion can be drawn from the study:

1. Material designed to afford guidance in the selection and use of pictures is found in current geography courses in amounts which suggest that the makers of these courses consider it an important type of guidance.

2. Much of the guidance is, however, of a type of relatively little value to teachers because it is too general and nondistinctive; that is, it does not bear concretely on the specific theme of teaching geography and puts too much stress on merely naming kinds of pictures that almost every teacher knows and too little stress on specific objectives, bases for selection, and particular types of teacher and pupil performance.

3. Cities, especially those in the northeast and north central parts, are beginning to center attention on the more valuable phases of guidance.

4. Since the one course that gives the most guidance of the better type (Baltimore) was published in 1931, and since most of the courses that afford adequate guidance were published in the second half of the decade in which all courses analyzed were published, it seems that the tendency is in the direction of affording better guidance.

5. In improving geography courses with respect to guidance in the selection and use of pictures, it would be well to emphasize to a greater extent the six specific types of guidance discussed and to devote little if any space to those numerous comments which, taken together, say no more than: "Use pictures of all available kinds well and teach children how to use them."

D. *By Supervisory Help*

The recent publication by Brunstetter contains some very concrete suggestions for developing and maintaining an in-service training program for teachers. The rôle of the supervisor in this connection is well emphasized. A summary of these suggestions is here given.

Crawford's report serves to illustrate the rôle of the director of visual education in supervising teacher training. The two reports supplement each other admirably.

One supervisor's procedure with teachers is described by Torrence.

Brunstetter, M. R. "How to Train Teachers in the Use of Sound Films." In *How to Use the Educational Sound Film.* University of Chicago Press. Chicago. 1937. p. 96-113.

One reason for teachers' inefficiency in using audio-visual materials of instruction is the lack of professional courses in this field in teacher-training institutions. The partial list of courses published in the May, 1936, issue of *Educational Screen* testifies to this fact. In progressive departments of visual education, a program of in-service training is provided through the cooperation of the director of visual education by (a) planning with the teachers and pupils, (b) visiting the teachers, (c) holding meetings, (d) giving demonstration lessons, (e) issuing bulletins, (f) compiling lists of sources, and (g) making materials available. The routine of the department might be left with the secretary-clerk, allowing the director to spend time in supervisory contacts. Training in the use of visual materials may be regarded as a form of professional growth and advancement, comparable to that which teachers receive from participating in a program of curriculum revision.

Desirable outcomes for a training program. The scope and direction of a program for developing skill in the use of audio-visual materials is necessarily determined by the goals to be achieved. One goal may be improvement in technique; another may be a knowledge of the fundamental principles underlying the effective use of the sound film; a third may be the knowledge of specific film-teaching methods which have proved effective; a fourth may be the habit of creative experimentation with film-teaching methods and procedures; and a fifth may be a knowledge of the available films in the local library and their application to the subjects taught in the local courses of study.

An in-service training course. One way to develop film-teaching ability is through a special course, including the theory of film teaching and its practical application in the classroom. Such a course has the advantage of focusing the teacher's attention from the beginning upon proper techniques of use. It is superior to the trial-and-error method by which even the good teacher can attain skill only gradually. It is much faster and more stimulating than the "infiltration" method of working with

individuals in supervisory conferences, which at best requires considerable time to reach every teacher.

In answer to the objection that such a course will be adding still another load to the teacher's overcrowded schedule, the statement is made that the teacher who is content to plod along without refreshing his point of view occasionally with new perspectives is in danger of professional stagnation. Alert teachers are continually upon the outlook for opportunities to develop their grasp of educational principles and to improve the efficiency of their classroom methods.

For many school systems, such a course can be provided in the extension department of a teachers' college near by. The instructor of such a course, however, should know the curriculum, should have a grasp of instructional problems, and should be familiar with the application of audio-visual devices in specific areas of learning.

A. Suggested content for the training course

I. Appreciation of the sound film as an instructional aid
Characteristics of the educational sound film; complementary relationship to other instructional aids; application to various subject-matter fields

II. Standards for educational sound films
How to rate films; suggestive list of standards

III. Integrating sound films with courses of study
Advantages of integration of the film in achieving the objectives of the course; method of writing sound films into courses of study

IV. Techniques of teaching with sound films
Planning the use of the sound film; introducing each showing of the film; guiding learning activities after the film showing

V. Operation of 16 mm. sound-film equipment
There has been a tendency in some courses in visual education to stress the physical and mechanical aspects. There is no question of their importance, but the educational aspects of the use of the film overshadows the mechanical. Training, however, should include a knowledge of the units of the projector, how to prepare a classroom for projection, and how to operate the projector.

B. Teaching the training course

The method for the training course should be the laboratory-demonstration-discussion type, an approach which is ideally adapted to the nature and functions of the devices being studied. Lectures should be amply illustrated with films.

C. Related training activities

The practical application of the theories developed in the training class may be made through experimental film lessons initiated by individual teachers and discussed before the group. Another type of activity is the integration of films in a curriculum-revision program.

D. Reference materials

There should be made available: books, monographs, and pamphlets descriptive of types of instructional materials and their selection for specific teaching situations; studies evaluating the effectiveness of the sound films; monographs describing programs; superior courses of study illustrating the integration of materials of instruction; reports dealing with film-teaching techniques; outstanding film-lesson plans in mimeographed form; syllabi for training teachers; periodicals in visual instruction; film catalogs and lists of sources; teachers' manuals accompanying the films in the local film library.

Special training for principals. Principals as well as teachers will profit by intensive study of the various aspects of audio-visual instruction. Their contacts with the film program are both administrative and supervisory. For the latter it is important that they participate in the same preliminary training as the teachers, as a foundation for their supervisory service in assisting the teachers to plan film uses and to evaluate the worth of film-teaching techniques. The principal's function as a supervisor is not that of operating the projector for teachers timid about mechanical things; he should be an educational consultant upon which the teacher relies for perspective and suggestions regarding instructional problems and methods.

The efficient administration of the film program, in so far as it devolves upon the principals, may be developed through a series of conferences in which the principals meet with the superintendent, or the individual directing the program, to map out desirable routines or to suggest modifications of the administrative procedure which seem desirable.

Supervision of film teaching. This is probably the most important means of insuring the development of skill in teaching with films. The initial basic training serves to give teachers a background of knowledge and understanding of the film medium, but supervision guides them as they grow in the ability to utilize the film in the classroom. The supervisor should be a person able to lead, to detect omissions and faulty methods, and to suggest desirable changes in approach and technique. This means that the person supervising should know more about film teaching than the teacher, should have a background of appreciation into which instructional materials and devices have been oriented with respect to the whole process of teaching. Furthermore, he must know what instructional materials may be secured, so that he may be of assistance to the teacher in planning units and projects. The supervisor's knowledge of films must go beyond the mere knowledge of titles and appropriate grade levels; he should know specific sections of the films, especially in connection with topics in the courses of study.

The supervisor visiting a classroom where the sound film is being utilized must consider the procedure of the film presentation in the light of the organization planned for the entire unit. Furthermore, the use of this instructional material is an integral part of the other teaching activities of the period, not to be disassociated in the supervisor's analysis.

It should be emphasized that the criticism of film-teaching methods, like that of any other teaching activity, must be made in terms of the purposes which the teacher has planned as the guide for the day's lesson. To illustrate, a casual observer might criticize the showing of only part of the film during the lesson, or object to a lack of discussion following the showing. Such techniques might be perfectly valid in terms of the purposes of the lesson.

Some questions which a supervisor might ask in observing a film lesson are:

1. How did the use of the film contribute to the attainment of the day's lesson?
2. How had the students been prepared for the showing? In what ways was the use of the film meeting learning needs and interests? Had the students been prepared to understand difficult new words or unfamiliar photographic devices?

3. How well did the discussion after the film showing uncover interest-leads to activities or study?
4. Was the use of the sound film well integrated with other learning activities proceeding in the class? Did the teacher make full use of film impressions in guiding the discussion after the showing?
5. Was the particular film used the best one which could have been selected for the purpose? Would another film have been better?
6. Did the use of the film contribute something unique or time-saving? Could the same purpose have been better served through the use of some other device—a field trip, textbook assignment, an experiment?
7. How well was the mechanical part of the film showing handled? Was the picture clear? The room well ventilated? Projection managed with a minimum of time consumed?
8. Is the film being utilized to stimulate creative expression in writing, speaking, and art work?
9. Are there centers of interest on the fringe of the unit or of the lesson taught which might profitably be developed for individual students?
10. Should there be another showing of the same film? If so, when, and for what specific purposes?

The supervisor should encourage the publication, even if only in mimeographed form, of outstanding lessons which his teachers have developed. Such recognition of professional excellence not only encourages the creative teacher, but helps to bring others up to a higher level of skill by suggesting film uses and procedures which might not have occurred to them. Another stimulating device is to issue periodically a mimeographed bulletin which may become a handbook of film-teaching methods, such as the Pittsburgh *Handbook for the Use of Visual Aids.*

Crawford, E. Winifred (Director of Visual Education, Montclair, New Jersey) "Director Guides Teachers in Use of Visual Aids." *Nation's Schools.* 16:32-4. November 1935.

A supervisory program includes many phases of work, such as planning with the teachers and pupils, visiting the teachers, holding meetings, giving demonstration lessons, issuing bulletins,

compiling lists of sources, arranging teachers' visitations and making material available.

Teachers need wise guidance in the handling of visual aids. Many use them effectively; some feel they are a nuisance, taking too much time for preparation; others want to use them but do not know what to expect from their use, and some include too many at one time.

The supervisor cooperates with teachers during the planning of problems and units of work and throughout the year helps them use visual material as an integral part of their teaching. In selecting visual aids, thought is given to creative ways in which pupils may work under the guidance of the teacher. As a result of the spirit of cooperation between teachers and director, the pupils often approach the director for assistance.

Many of the director's visits to the classroom are in response to teachers' requests. These visits are for various purposes: consultation about what visual aids are available, aid for a special group or pupil, help with equipment. The approach to teachers who are reticent about using visual aids is gradual and psychological. An invitation to give a demonstration lesson on the use of visual aids must come from the teacher.

Teachers' meetings offer a splendid opportunity to discuss the philosophy and fundamental educational principles underlying the use of visual aids. At such meetings a demonstration lesson, followed by discussion, is found to be effective. The showing of films illustrating the use made of visual aids in the school system is very stimulating.

The director also offers cooperation to other supervisors and department heads. Bulletins describing new developments in the field of visual education, mimeographed source lists, bibliographies, and the like, are sent out from time to time.

The organization and routine of handling visual aids in the Montclair schools have greatly promoted their use. The central office lends prints, photographs, stereographs, slides, film slides, motion pictures, maps, posters, charts, specimens, articles, pamphlets, and equipment. Each school has its own projectors.

Through supervision such as this, the director helps the teachers in an understanding of the modern trends in philosophy of education, for whose application and practice visual aids are essential.

Torrence, Floro (General Supervisor, Indianapolis Public Schools) "Guidance in the Use of Visual Education Material." *Educational Screen.* 16:24-5. January 1937.

Supervisors in their direction of teachers find the following types in varying degrees: the alert, interested, efficient teachers, and the teachers who have become inefficient by reason of ill health or from a lack of interest. Both types need stimulation and direction, the application of such help varying with the relationship that exists between supervisor and teacher, the teacher's general attitude toward her work, and her skill and technique.

There are several ways in which the supervisor may proceed to convince a teacher that a different method from the one being used is necessary. He may, first of all, visit the teacher in question for an appropriate length of time and in the course of discussing the work broach tactfully the subject he has in mind, as for example, the use of visual aids. In his enthusiasm the supervisor should not give the impression that visual aids make up a separate subject or are even a new procedure. The best argument for their use should be that they enrich the subject matter of the course.

The discussion may be followed by an invitation to the teacher to visit a colleague who is using visual aids as a means of training powers of observation and of developing ability to interpret correctly. The teacher's curiosity may thus be stimulated. Ask her to make the visit with this question in mind, "How do visual aids effect worth-while learning?" Arrangements should be made in advance with the demonstration teacher for such visits. Immediately following the demonstration, a conference should be held with demonstrating teacher, visiting teacher, principal, and supervisor attending.

The supervisor may then ask the teacher to invite him to visit her again at some future time after she has had time to reorganize her methods in accordance with modern interpretation of fundamental principles. In an advisory capacity, the supervisor may offer guidance in such matters as further experimentation, use of materials, interpretation of courses of study and curriculum records as they relate to visual education, research reading, where and how to obtain materials, and their care.

Often in the case of teachers unaccustomed to the use of visual-education materials, a supervisor finds it necessary to break down such inhibitions as not knowing how to operate projectors, and fear in initiating the use of unfamiliar materials. Recommendations to take a course in visual instruction will often solve difficulties for teachers when other measures offered by supervisors and principals fail.

Other instances of supervisory assistance for teachers in the use of visual aids have been described in the following short articles: "Getting the Faculty Machine Minded," by F. G. Hoek (*National Elementary Principal.* 13:167-70. June 1934); "Teacher Training in Washington, D. C.," by Rebecca J. Gray (*Visual Instruction News.* 4:22-3. March 1932); and "Picture Education—the Mechanics of Its Operation," by Harry H. Haworth (*Nation's Schools.* 11: 23-8. January 1933).

In all the foregoing reports the general position seems to be that the responsibility for in-service teacher preparation rests with the local school authorities.

IV. What is the Scope of Instruction in the Use of Visual Aids?

In *Picture Values in Education,* by J. J. Weber, there appeared an outline for a course in visual education which had been prepared by Mr. Weber for the University of Kansas in 1921. In 1929, Aughinbaugh revised and enlarged upon this outline. His version, which appeared in the *Educational Screen,* is summarized as follows.

Aughinbaugh, B. A. (Ohio State Supervisor of Visual Instruction) "Outline for Course in Visual Instruction." *Educational Screen.* 8:307-8. December 1929.

I. Historical
  A. Evolution from visual to aural communication
    1. Empirical impressions (Dewey)
    2. Natural signs (Dewey)

3. Intentional signs (Dewey): gestures; oral speech; recorded forms of communication
4. Poetic imagery; significance of poetic climax in Shakespeare; figures of speech vs. pictures.

B. Evolution from aural to visual communication
1. Bacon and inductive reasoning: its effect
2. Evolution to mnemonics, ideographs, and pictographs
3. Evolution of photography: history of photography
4. Evolution of projected pictures (Ramsaye and Talbot)
5. The motion picture a qualitative gain to communication; the close-up, flash back, stop and substitute, etc.
6. The school and poetic expression; the school and scientific expression
7. Future evolution of the motion picture; convenience for (a) direct viewing device for the individual, (b) reading and thinking, and (c) viewing and thinking.

II. Visual Aids

A. Types of visual aids
1. The school appearance
2. The school journey (Hoban): general information; industrial; the museum; the laboratory (science, natural, social, literature)
3. Things, specimens, models, exhibits
4. Painting, drawings, charts, posters
5. Cartoons, maps, graphs, diagrams
6. Stereographs
7. Photographs, half-tones, prints
8. Lantern slides
9. Motion pictures
10. Outlines, schemes
11. Pageants.

B. Sources of visual aids
1. School environment
2. Library
3. The museum
4. The blackboard
5. Commercial firms
6. Government departments
7. Extension bureaus.

III. Technical
  A. General problems
    1. Fire regulations
    2. Use of electricity
    3. Training and organizing of group of operators
    4. Necessary adjuncts: booths, screens, shades, storerooms
    5. Care of apparatus: projectors and films.
  B. Lantern slides
    1. Types of lanterns: glass slides, film slides, opaque pictures; discussion of how to use each
    2. Making slides; laboratory work
    3. Making photographs: prints (contact), enlargements, taking the picture (cameras, lenses, judging light, composition); laboratory work.
  C. Motion pictures
    1. Types of projectors: standard, semiportable, portable
    2. Types of film: nitrate, acetate, 35 mm., 16 mm.
    3. Handling the projector: threading, framing, focusing, lighting, timing, gaging speed
    4. Cleaning and oiling: how to clean lenses, gate, sprockets; importance of oiling and how to do it
    5. Causes of trouble: hooked sprocket teeth, emulsion on film slides or springs, loose take-up, bent reels, dirty sprockets, in-and-out of focus, slapping noise, jumping picture, dim picture, weaving picture, loop pulling
    6. Mending film, notching broken sprocket holes, inspecting, shipping.

IV. Educational Procedures With Visual Aids (Dorris; Hollis; Ellis and Thornborough)
  A. Special methods for:
    1. Social science: geography, history, civics
    2. Linguistic studies: foreign languages, vernacular, literature
    3. Biological sciences: botany, zoology, anatomy
    4. Health studies: physiology, foods and diet, physical training
    5. Physical sciences: physics, chemistry, physiography
    6. Mathematics: geometry, arithmetic
    7. Vocational guidance: agriculture, industries, home economics.

B. General methods
   1. Model lesson plans for each visual aid
   2. When to use each type of visual aid
   3. Preliminary preparation
   4. Follow-up work
   5. Classroom use vs. auditorium use.

V. The Administration of Visual Instruction
   A. Supervising the use of visual aids
      1. Classroom supervision
      2. Training-school courses
      3. Demonstration lessons.
   B. Administering the use of visual aids
      1. In a single school: circulation of materials, teachers' references
      2. For the school system: purchase costs, inspection and evaluation; classification for use; correlation with special subjects; distribution and storage; office records
      3. For state institutions and departments: booking and routine; rentals and transportation; film-library service; film score cards; teachers' leaflets.

VI. Principles Underlying the Use of Visual Aids
   A. Hygiene of the eye: physiology of, defects and treatment, lighting of classrooms, binocular vision
   B. Pictorial saturation point: how many pictures, how much language, how much activity, word-picture-activity balance
   C. Emotional effects of pictures: pleasure and satisfaction; interest stimulated
   D. Moral values of pictures: information, interests, attitudes, ideals
   E. Standards for evaluation of pictures: truth, simplicity, problematic organization, standard for comparison, appeal to feelings, social-moral values, static and dynamic content, mechanical perfection, photographic quality, adaptation to purpose or age
   F. Factors in pictures and their use: realism, size or area, color, definition, lights and shades, composition, perspective, projection, stillness, motion, isolation, group presence

G. Why use visual materials and methods?
   1. Primary sources of knowledge
   2. Necessity for experience
   3. Dangers of verbalism
   4. Motivating learning
   5. Vitalizing subject matter
   6. Time saving in modern life
   7. Retardation and elimination
   8. Concreteness in education.

VII. Research in the Use of Visual Aids
   A. General problems
      1. Can one learn with less experience when objective aids are used?
      2. Is the motion picture more effective than the still picture?
      3. Does the abstract thinker get more out of visual instruction than the "thing" thinker, or less?
      4. What is the specific function of visual aids in the learning process?
   B. Administrative problems
      1. How should the classroom be darkened so as to be least harmful to vision?
      2. What is the best way to develop a visual-aids department in a small school system?
      3. Can a system of film exchange be worked out for rural schools with the county as the unit? How?
   C. Problems in methodology
      1. What is the ideal lesson plan for the use of educational films?
      2. How does the time of using a visual aid vary with its nature?
      3. How does the use of realistic aids differ from that of the diagrammatic?

Bibliography

Outlines of some recommended courses in visual education have next been summarized. These include the syllabus by the committee of which McClusky was chairman and the plans by Gregory, Hutchinson, and Henderson. The plan of the French educators, Barrier and Lebrun, surpasses any hope American educators have expressed for visual instruc-

tion. They visualize a cinema-teaching normal school as part of the higher educational system.

McClusky, F. Dean (Director, Scarborough School, New York), **Jenkins, John J.** (Bronxville Schools, New York), **Knowlton, Daniel C.** (New York University), **Merton, Elda** (Waukesha, Wisconsin) *Visual Instruction: Syllabus of a Proposed Textbook for Use in Teacher-Training Schools.* 1932. Unpublished.

The main distinction between visual instruction and other instruction is a matter of emphasis. Visual instruction emphasizes the value of concrete imagery in the learning process, whereas other instruction stresses the importance of verbal imagery.

The justification for discussing the relation of visual aids to instruction apart from general methods lies in the fact that there has developed, rightly enough, a strong movement to centralize visual materials in schools as such materials become increasingly common through the rapid growth of photography. This movement toward centralization has been furthered: (1) by the development of elaborate educational departments in museums; (2) by the establishment of school museums, such as those in St. Louis, Reading, and Cleveland; (3) by the development of visual-instruction extension service in state universities; (4) by the growth of city school bureaus for visual instruction; and (5) by the organization of companies to manufacture and distribute material equipment for visual education.

A second reason for a separate discussion is found in the fact that in general- or special-methods textbooks little attention has been given to the use of visual materials. Finally, a critical analysis and evaluation of the situation is needed before mistakes are made which will detract from the advantages of using such devices.

A teacher should be familiar with the following aspects of visual instruction:

1. The place of visual instruction in the modern school from the viewpoint of the educational psychologist
2. What experience has taught us about the value and place of visual instruction in the modern school
3. What research has taught us about the value and place of visual instruction in the modern school

[This section has been adapted from F. Dean McClusky, *Visual Instruction: Its Value and Needs.* The field of

research is divided into five sections: (a) the determination of the pedagogical effectiveness of the different materials; (b) the development of effective techniques in teaching with visual aids; (c) the correlation of visual materials with the curriculum; (d) the improvement of the mechanics of constructing and presenting visual materials; and (e) the improvement of the administrative procedure involved in handling apparatus and materials of visual instruction.]

4. A classification of visual materials
5. A description of the various types of visual material
6. The technique of teaching with visual aids
7. The use of visual aids as applied to various school subjects
8. The administration of visual education in the modern school
9. The production, care, and distribution of visual materials
10. Sources of visual material
11. Sources of visual equipment

Selected reading references are listed after each section.

Gregory, William M.[15] (Educational, Museum, Cleveland) "A Teacher's Training Course in Visual Aids." *Educational Screen.* 4:88-90. February 1925.

A teacher-training course in visual education, based on sound educational practice, is needed for elementary-school teachers. Such a course should take note of the fact that the psychological reactions should determine the visual aids best suited to produce results in the different school subjects. The relation of visual aids to imagination, interest, effort, memory, and association is the decisive factor in the choice of visual materials.

The training course should consist of general lectures on principles and practice, discussion of the various visual aids and their place in education, practical experience in preparing and using exhibits, demonstration lessons with pupils under favorable opportunities for observation.

[15] Compare with the prospectus for an Institute of Visual Education under the direction of Dr. Gregory, held at Western Reserve University, June through July 1937. Consideration is given by specialists of the following topics: fundamental problems, visual materials, equipment, application of learning aids to the various school subjects; research and organization of teaching units, consideration and evaluation of the motion picture, administration of visual-auditory aids, information on sources of materials, readings, the Cleveland Museum and visual instruction, and an evaluation of visual aids in education.

The following outline is suggested for studying each type of aid:

1. Its place and value in the course of study; subjects, topics, and methods of use. Demonstration lessons with objective tests may be given to pupils before and after lessons to test the efficiency of the different visual aids
2. Instructional methods in class and auditorium
3. Educational value: reactions of the pupils as shown by the results of experiments
4. Standards of quality: picture value, photographic quality, and the like
5. Methods of testing efficiency
6. Sources and costs: commercial, federal, local
7. Technique of handling material and equipment, including techniques for filing, mounting, storing
8. Reading references, including courses of study and suggested use.

This course should cover thirty hours of work. A survey of courses in the United States at the time of writing shows that they emphasize the technical aspects of photography, the mechanics of projection, the motion picture, and that quite generally they direct the demonstration lessons with pupils. Visual-instruction courses tend to be elective rather than required in teacher-training institutions.

Hutchinson, J. Raymond (Director of Visual Education, Thomas Jefferson High School, Elizabeth, New Jersey) "Fundamentals of Visual Education." *School Executive.* 55:186-8. January 1936.

Superintendents and administrators should establish or foster existing courses in visual instruction for all in-service teachers, with proper credit and immediate application to existing educational needs.

In most systems, courses in visual education could be offered by the university extension service with very little expense to the school system. In fact, where courses of this type are not available, training and experience in the use of visual aids might be carried out as a faculty project. Superintendents and administrators could lead the way in requiring that new entrants in the teaching field have some training in visual and audio-visual instruction through adequate teacher-training courses. Pennsylvania has done well to make a laboratory course in visual

and sensory aids mandatory for certification in teaching in that state. It would be wise for all states to require such a course.

The following items are suggested for inclusion in a course: (1) the establishment of the scope of the field; (2) the identification of visual and sensory aids; (3) the determination of the use of each; (4) the study of the construction and operation of each; (5) the evaluation of materials; (6) the application of materials to existing curricula and educational needs; (7) the development of classroom procedure. "The whole philosophy of the course should deal in objective fashion with the highest concepts of learning through the fundamental uses of the visual-sensory mediums."

For the student, the use of such courses should result in "a more full and complete life through an enlarged opportunity to understand life; for the teacher, natural reluctance for new things is often supplanted by an enthusiasm for the practical usefulness of the ideas set forth." The average teacher is not aware of the value of visual instruction in correlating, clarifying, and enriching his own personal ability and merits. The common entertainment idea of the movie still persists, but an educational motion picture can aid in giving *experience.*

This experience must be directed, however. In many of the complex situations illustrated on the screen, even when it is possible to present the details in proper relation to one another, there must be a "controlled reality." One idea at a time must be emphasized with other details subordinated, until each important item is given its proper place and opportunity. Another plan is to teach the student *for what* to look and to be willing to reexamine the many details at length.

Henderson, H. A. (State Teachers College, Terre Haute, Indiana) "What Should a Course in Visual Instruction Include?" *Educational Screen.* 11:186. June 1932. Reprint from the April 1932 issue of *Indiana Teacher.*

A course in visual instruction should be first of all a laboratory course, whose instructor is familiar with the various types of visual aids and can teach their use, manipulation, and care. If the students of the visual method of teaching are to derive full benefit from the course, each one must do some supervised practice teaching following the recognized psychological lesson procedure. The procedure is as follows: The instructor should

motivate the lesson by bringing some known experience before the pupil; create interest by relating known to unknown experience; give the pupil a concrete and meaningful vocabulary; assign tasks and make available sources of information for research work; after the research has been done, hold a conference with the class allowing pupils to present and discuss pictures, objects, and the like, and to bring up questions about these things they would like to know or do.

It is suggested that a course in visual instruction be given separately for grade- and high-school teachers. The following are the purposes of such a course: To give a background of correct imagery for descriptions outside the child's experience; to raise problems the answers to which may be found by reading, that is, to motivate silent reading; to make the lesson vivid and interesting; to focus the attention of the group upon a given subject; to create an atmospheric background for teaching appreciation and literary interpretation.

Barrier and **Lebrun** (France) "Teachers' Collaboration in the Production and Use of Didactic Films." *International Review of Educational Cinematography.* 6:9-13. January 1934.

Teachers must collaborate in many ways in the preparation of didactic films—in the choice of subjects, in preparing the scenario, in mounting (editing) the film, in the actual filming.

A special course in pedagogical and technical training in cinematography is essential. Just as a real cartographer, if he is to be more than an ordinary draftsman, must know geography, so the cinema specialist must possess professional qualifications. A cinema-teaching normal school should be part of the higher education system and should be a regular training school for those who will be called upon to produce films to fit the needs of schools.

An international normal cinema school is another possibility. Such a school would tend to promote the best scientific, technical, and literary training. Included would be training in the use of the lantern slide, the phonograph record, the sound film—with its techniques of production—and in the preparation of teachers' manuals.

A distributing service on a large scale would encourage intelligent criticism from the field, leading to the production of desirable didactic films.

The article on teacher training by Spencer summarizes the facts, attitudes, and skills that he thinks teachers should acquire after taking a course similar to the one recommended by the State of Pennsylvania.

Spencer, Herbert L. (Principal, Henry Clay Frick Training School for Teachers, Pittsburgh, Pennsylvania) "Training Teachers to Recognize Vital Values in Education: Abstract." *National Education Association Proceedings.* 68:920-3. 1930.

The basis of a course given at the Henry Clay Frick Training School for Teachers in Pittsburgh is the very complete outline of factual content for a course in visual education, "Summary of Technics of Visual and Other Sensory Aids for Teachers in Service and Teachers in Training," prepared by C. F. Hoban, director of visual education for the Commonwealth of Pennsylvania at Harrisburg. The following are some of the facts, attitudes, and skills that teachers are expected to possess.

Facts. Visual education is not a separate subject but an effective means or method of instruction that can be successfully applied to nearly all subjects. While teachers will be trained in the techniques of using visual and other sensory aids by a special methods course, it is highly desirable that these techniques be included as a part of the special courses devoted to methods of teaching reading, history, science, nature study, and the like. Teachers must recognize that visual and other sensory aids are vital to the successful teaching of practically every subject in the curriculum because they furnish the concrete elements necessary to a complete understanding and recognition of vital values in the material composing the school curriculum.

Teachers should recognize that visual and other sensory aids have played a major part in the successful educational systems of the past. The use of pictures by the early Indians, the Greeks, the early Egyptians, and even by the cavemen in primitive times are examples.

Teachers should know that sensory experience is the foundation of intellectual activity. Very few teachers are gifted with the ability of making word pictures realistic. And yet, it is the realistic and concrete that children are first interested in and not the abstract and symbolic.

Teachers must also recognize that verbalism is probably the major weakness in most classroom situations. This weakness in teaching can be remedied by proper use of visual material.

Teachers should recognize, further, the values of visual aids not only in teaching but in other fields. Henry Ford realized the value of motion pictures as a means of developing better automobile repairmen. The United States Government uses visual aids extensively in its work in immigration, Americanization, health, and the like. Doctor Wholey, psychiatrist at the University of Pittsburgh, has recently developed an extremely interesting film on multiple personality.

Teachers should also recognize that the effective use of visual aids will result in these definite outcomes: an economy of time in teaching; enrichment of instruction; and development of correct initial impressions.

Teachers should know the various types of visual aids and the values of each.

Attitudes. In order to recognize vital values in education, the teacher should develop a scientific attitude so that he may determine for himself the relative values of the materials and techniques. He should also be aware that though the fundamental principles in teaching change very little, better and newer methods of subject presentation are constantly being devised; he should, accordingly, be ever alert to accept and try these new devices.

Skills. To develop skill in handling effectively the different types of visual material, every teaching-training institution should number in its curriculum a course in visual education which should include not only a study of the factual background and the development of mental attitudes but very practical laboratory assignments in the actual care and operation of the various devices common to visual education. Each student teacher could be required to conduct a school journey; to demonstrate with objects, specimens, and models; and to make extensive use of various exhibits. He should have practice in the care and operation of projectors. He should know how to correct such troubles as clouded illumination, too small or too large a picture, failure of lamps to light, poor focus, displacement of optical system, and appearance of spectrum colors on the margin of the screen. He should also know how to operate a 16 mm. projector, and in some school systems a 35 mm. projector. The

course should further include the making of lantern slides, especially those on plain and etched glass and those made with cellophane. It is also desirable that the teacher know how to take, develop, and finish good pictures, and to make photographic slides.

The only text books available for students and instructors in teachers' colleges and universities are:

Dorris, A. V. *Visual Instruction in the Public Schools.* Ginn and Co. Boston. 1928.

Hoban, C. F., Hoban, C. F. Jr., and **Zisman, S. B.** *Visualizing the Curriculum.* Cordon Company. New York. 1937.

There are, in addition, an increasing number of reference books for students in the field, as the large number of abstracts in this volume will indicate.[16]

V. Preparation for the Teaching of Motion-Picture Appreciation

Learning from visual-sensory materials reaches beyond the walls of the classroom. That this fact is now accepted, the recent motion-picture appreciation movement testifies. The findings of the Payne Fund investigation have shown the influence of theatrical films on the life and attitudes of children. Courses in motion-picture appreciation are springing up rapidly in school systems of various sizes in all parts of the country. Before a teacher can undertake to influence her pupils toward a more critical evaluation of what they see at the movies, however, she must be given some guidance herself. Edgar Dale explains what sort of preparation teachers need for launching a motion-picture study program.

[16] See also Appendix.

Dale, Edgar. "A Comprehensive Program for the Teaching of Motion Picture Appreciation." *Educational Screen.* 13: 125-8. May 1934. An address delivered before the Visual Instruction Department of the National Education Association in Cleveland, February 1934.

The findings of the Payne Fund investigations have brought visual-education groups to a recognition of the fact that it is human behavior that we are trying to influence through our visual aids. The actual life and feelings of a man who makes a tire in a rubber factory, for example, are more important than the mechanical processes involved in making a tire. The findings have also shown that visual influences are at work in the out-of-school life of the child and that these influences need to be reckoned with in our programs.

The great need for motion-picture appreciation in schools is further evident in the fact that though hundreds of thousands of dollars are spent in the school to give young people accurate notions about the world, these notions may easily be distorted by the inaccurate ideas they are likely to get at the movie theater.

How, then, are young people to be trained, first, in the wise selection of motion-picture entertainment, and second, in standards by which they can evaluate what they see on the screen? To so train them would involve a whole program of education, in which the home, the church, and the school should cooperate; it would require the development in children of the habit of using standards for evaluating motion pictures similar to those set up in other fields. Since parents must help to regulate the movie experiences of children, they should assist in the development of these standards.

The activities of some national organizations with respect to motion-picture appreciation are as follows:

The National Board of the Young Women's Christian Association, through its publication, the *Woman's Press,* offers guidance in the page called "The New Three R's—Reels, Reading, and Radio" and has published a series of articles on the motion picture. The Association is also making experimental programs in motion-picture appreciation for which some fifty groups have been furnished with free text materials.

The National Council of the Young Men's Christian Association discusses almost every month, in several national publications, some phase of motion-picture research findings for

discussion groups. Three tentative outlines for discussion groups have been worked out.
The National Catholic Welfare Conference has published outlines on motion pictures for study groups and gives much space to the findings of the Payne Fund studies.
The International Council of Religious Education publishes articles on the relation of motion pictures to youth.
The National Council of Teachers of English has sponsored a nation-wide program of motion-picture appreciation, using the textbook, *How to Appreciate Motion Pictures,* and other printed matter.
The National Congress of Parents and Teachers has published a series of bulletins on its national program in the field of motion pictures; one bulletin is entitled "Teaching Motion Picture Discrimination to Children and Youth."

A program of motion-picture appreciation has been worked out in five states: North Carolina, Connecticut, Iowa, California, and Ohio, in cooperation with the state departments of education.

It should be the responsibility of the school, under the sponsorship of the Department of Visual Instruction of the National Education Association to include in the visual program the out-of-school experiences of children by adding to their film libraries outstanding theatrical films and by developing in young people habits of critical judgment.

Dale, Edgar. "Motion-Picture Appreciation." *School Management.* 5:181-2. March 1936. Abstracted from the *Harvard Teachers Record.*

The goals we have set up in our work in motion-picture appreciation are these: (1) To develop an understanding of the influence of the motion picture upon the information, attitudes, and conduct of children, youths, and adults; (2) to develop discrimination in the selection of motion-picture entertainment; (3) to evaluate critically what is seen on the screen; (4) to develop leadership among high-school students in the solution of our motion-picture problems.

Before a teacher can help a student to clarify his ideas as to motion pictures, however, she must first clarify her own point of view. She must understand the premises, articulate and inarticulate, that are present in motion pictures. Are we unconsciously accepting premises that are really inimical to our own philosophy?

Note, for instance, the overemphasis on chance, the fortuitous in human events, that occurs so frequently in motion pictures. Consider the unusual methods by which hero and heroine are apt to make each other's acquaintance, or the excessive use of supernatural forces as in *The Return of Peter Grimm* or *Peter Ibbetsen.* Another premise may be found in the numerous themes treating the white-man ego-complex. To white people, Negroes like Stepin Fetchit may appear funny in their stupidity and slovenliness, but they are not funny to colored people.

Another major premise of American movies is that "labor is indecorous." The concept of labor set forth in motion pictures is confused, evasive, and even distorted. Most farming on the screen is done by gentlemen farmers in well-heeled boots, or is introduced to provide a rustic setting for a love scene. Still another tendency on the part of motion-picture producers is to pay more attention to the social register than to the social scene.

Other premises are the acceptance of the economic *status quo*; the notion that war and especially espionage are glamorous; the idea that crime is caused by bad people—kill or incarcerate the bad people and you solve the crime problem; the illusion that romantic love solves most problems.

Teachers, then, must face the question: Shall we accept reality or shall we avoid it through escape religion, escape literature, escape movies? The alternative is to have motion pictures with insight. Many of the genuine problems of modern living—unemployment, bad housing, poverty—might be given dramatic and revealing treatment on the screen.

The teacher of motion-picture appreciation is cognizant of the fact that the producer is using a form of suasion, which in times such as these—especially since movies are in the hand of those who are benefiting from the *status-quo*—may be dangerous to high-school students. Schools have overemphasized the accretion of unfocused information and have neglected the development of good taste and good judgment.

A recent survey of colleges and teacher-training institutions reveals the fact that many college officials are aware of the rôle of the radio and the motion picture in molding the lives of girls and boys. They believe that teacher-training institutions have a responsibility in the preparation of teach-

ers to teach discrimination in the use of these media. Though only in a few cases has there been any attempt to offer organized courses in radio and photoplay appreciation, it is gratifying to note that fifty-three institutions are considering the introduction of such instruction in their curricula. A brief summary of the findings of a national survey is here outlined.

"Training Teachers in Appreciation." *The News Letter.* February 1937.

The results quoted here are adapted from the report by Dr. Cline M. Koon on the survey conducted by the U.S. Commissioner of Education in April 1936. A detailed summary is available from the Editorial Division of the U.S. Office of Education, and is entitled, "Teacher Training in Radio Program and Photoplay Appreciation," by Cline M. Koon.

The growth in courses in photoplay and radio program appreciation in high schools throughout the country indicates the need for teacher training in the technique of this type of instruction. To ascertain how many teacher-training institutions in the U.S. are offering such preparation, the U.S. Commissioner of Education John W. Studebaker sent letters of inquiry in April, 1936 to 1,530 officials in 1,142 institutions. Replies were received from 828 officials in 720 (63 per cent) of the institutions and further data were obtained by additional correspondence and an examination of college catalogues.

The study discloses that only 14, or less than 2 per cent of the institutions replying are offering regular courses in either radio or motion picture appreciation. Six of these are in both subjects, and eight in motion picture appreciation alone. Some instruction in these fields is afforded by 224 institutions, (31 per cent), as units of work in courses in education, sociology, English, and other subjects. Some form of instruction in the field is being planned by 74 institutions. This reveals that a total of 284, or 40 per cent of the teacher-training institutions replying are offering or planning to offer some instruction in radio and motion picture appreciation.

On the other hand, three-fifths of the colleges replying indicated that they were not only failing to offer this instruction, but were not even planning to do so. It is pointed out, however,

that many of the colleges in this category are affording their students training in discrimination through school broadcasts and motion picture production.

In most of the cases, the instruction being offered in appreciation of the radio and motion picture is through units in other courses. They are included in special methods, visual education, English, art appreciation, music appreciation, or play production courses.

The method of instruction usually prevailing in these courses is discussion of available programs or motion pictures and an evaluation of their contribution to education. Study guides and teachers' manuals are usually used to supplement the discussion.

Consideration will now be given to texts and manuals available in the field of motion picture appreciation.[17]

For teachers of high-school pupils, there is a teachers' manual to be used with the textbook, *How to Appreciate Motion Pictures,* by Edgar Dale. The manual is entitled *Teaching Motion-Picture Appreciation: A Manual for Teachers.* The abstract follows.

Pollard, Elizabeth Watson. *Teaching Motion-Picture Appreciation: A Manual for Teachers of High-School Classes.* Bureau of Educational Research, Ohio State University. Columbus. 1933. 60 p.

The manual, it is explained in the preface, was developed after experimental courses in city and rural schools had been organized and later studied by means of interviews, verbatim minutes, and much direct observation. It has special application to the textbook by Edgar Dale, *How to Appreciate Motion Pictures.*[18]

The outline of chapters is as follows:

1. The Purpose and the Methods of Study
   Purpose; teacher's preparation; use of literature as illustration
2. The Use of Discussion
   Common types of discussion, including developing, commenting, collecting, building; method in discussion, i.e., approach, discussion, conclusion; points to remember

[17] A bibliography for use in motion picture appreciation courses was printed in the April 1937 issue of the *News Letter,* published at Ohio State University, Columbus, Ohio. See also Appendix.

[18] The Macmillan Company. New York. 1933.

3. Source Materials and Their Uses
   The textbook; books and magazine articles; study guides; radio; talks; tests
4. Suggested Study Units
   Eleven units to correspond to the chapter headings of the textbook; suggestions for other activities

The second part of this manual develops the basic problems of the motion picture as suggested by the textbook. These problems include selecting the picture, the story and its production, the purpose and future of motion pictures.

A very valuable course of study in motion-picture appreciation has recently been published. This booklet contains suggestions, for teachers of all subjects in the high school, for using the out-of-school motion-picture experiences of students. This is the most comprehensive teachers' manual produced to date.

Sterner, Alice P. (Barringer High School, Newark, New Jersey) and **Bowden, W. Paul** (East Orange High School, East Orange, New Jersey) "A Course of Study in Motion-Picture Appreciation." Educational and Recreational Guides, Inc. 138 Washington St., Newark, New Jersey. 1936. 63 p.

This course of study is made up of a series of units which will coordinate naturally with social and physical sciences, history, modern languages, and English. In its broader scope the course will contribute to the teaching of all the subjects presented in a modern high-school curriculum. The units offered are so arranged that they may be adapted to class age and intelligence and to the amount of time allotted for instruction in motion-picture appreciation.

In addition to the list of general objectives and general activities, there are outlined twelve units, with objectives, content, materials (bibliography), appraisal, and suggested activities for each. The topics treated in these twelve units are: Introduction to the Study, History of Motion Pictures, Motion-Picture Vocabulary, Story, Types of Motion Pictures, Acting, Director, Sets, Sound and Music, Photography, Seeing a Motion Picture, Value of Motion Pictures.

A comprehensive bibliography is appended.

A very helpful bulletin has been published by the California Department of Education, offering suggestions to teachers in the elementary schools with respect to a motion-picture appreciation program. The purpose and plan are here outlined. Still another booklet, *How to Judge Motion Pictures,* by Sarah MacLean Mullen, is designed for use with high-school students.

Potter, Gladys L. (Assistant Chief, Division of Elementary Education and Rural Schools) (Chairman of Committee) *Motion Picture Appreciation in the Elementary School.* Department of Education Bulletin, No. 9. Sacramento, California. May 1, 1934. 37 p.

Vierling Kersey, Superintendent of Public Instruction, states in the foreword that *Motion Picture Appreciation in the Elementary School* is the first of a series intended to give aid to superintendents, principals, teachers, parents, and students. It is notably significant, says Kersey, that we should have come to realize that through a study of out-of-school influences, teachers, parents, and educators may be aided in the provision of more adequate educational opportunities for children.

In the preface, Mrs. Gladys L. Potter, chairman, states that the suggestions presented in the bulletin are for the use of the teacher in awakening children to the educational possibilities of the films and in arousing appreciations that will raise the standards of movie audiences. It is in no way an attempt to promote the attendance of children at motion-picture theaters.

The bulletin is divided into two parts. In Part I, "The Motion Picture and Its Relation to Education," are considered the influence of the motion picture, recent studies relative to the motion picture, educational possibilities in motion pictures, and the responsibility of the teacher. In Part II, "Suggestions to the Teacher," we find a discussion of photography, making a screen play, tone values, documentary films, costumes and make-up, music, sets, and bibliographical notes.

Mullen, Sarah MacLean. *How to Judge Motion Pictures.* Scholastic. Chamber of Commerce Building. Pittsburgh, Pennsylvania. 1934. 60 p.

This pamphlet discusses motion-picture appreciation under the following headings: Rules Before the Play; While We

Watch; Plot—What It Is and How to Judge It; Talk After the Play; Working with the Theme; The Story; Directors—What They Do; Acting, Good and Bad; Appreciating the Sounds We Hear; Good and Bad Talk; Eyebrow Pencil and Grease Paint; Building the Stage Set; Photographing Light; The Camera and the Camera Man; More About Sound; More About Directors; The Last Step; and Making Our Own Judgments.

Teachers of photoplay appreciation have been greatly aided in developing discussions around current films, by the valuable suggestions and bibliography provided in the study guides published by Educational and Recreational Guides, Inc., of Newark, N.J. These appear from time to time immediately preceding the release of an exceptional photoplay.

Another bulletin compiled for use in photoplay appreciation classes is *Motion Picture Appreciation* (Bulletin 98), issued in 1935 by the Pennsylvania Department of Public Instruction in Harrisburg.

VI. Should Courses in Visual Instruction be Separate or Should Guidance be Offered in Special Methods Courses?

The argument that visual aids may be fitted into almost any type of higher-education course and that a separate offering is hardly necessary is offered by Freeman. Similarly, McClusky, in his article, "Finding the Facts of Visual Education," (see page 385) concludes that "the solution [of teacher preparation in visual education] does not lie in directors of special courses, but rather in that of incorporating into the already existing prescribed courses in methods, the treatment of the topic visual instruction as part of these courses." A recent address by the Dean of the School of Education of the University of Wisconsin also advances the argument that a separate course is undesirable. W. M.

Gregory, director of the Educational Museum in Cleveland, is of the same opinion. Gregory writes: "I believe that educators are making a great mistake in pushing a course in visual education or instruction. What should be done is that each subject such as history, geography, science, and so on, should develop its visual material within its course. To separate visual instruction into a distinct course is a mistake, and in many places has not succeeded very well. It does reach a few visual enthusiasts, that is true, but to reach a great mass of teachers, the visual material should be integrated into each course of study and recognized as an essential part of that course of study. Perhaps that might be the thesis of a visual-instruction course—how to introduce into each curriculum in the school the appropriate and essential visual material, and to give the teacher skill in using that material in the subject for which it is designed."

Freeman, Frank N. "Graduate Training in Visual Instruction." Quoted in *Educational Screen.* 5:489-91. October 1926.

Courses in visual instruction are classified as dealing with the problems (a) of particular positions, (b) of groups of jobs having methods or processes in common, and (c) of basic sciences, bodies of knowledge, or research techniques. Courses that consider the problems of particular positions deal, for example, with the duties of the superintendent or principal, or with special methods in, say, geography. Courses of this type should include a discussion of visual education. Courses that deal with problems of groups of jobs having methods or processes in common may take up the administration or methods of teaching. They may then include visual education as one of the topics to be treated. Courses dealing with the problem of basic sciences may consider educational psychology, for example, with visual education as a method of presentation, or they may consider experimental education, statistical method, or historical methods.

"The conclusion which I draw from this analysis is that visual education is a natural topic in a variety of courses. It is of interest to various types of students and is to be approached

from various points of view. For this reason, it is most appropriately treated in connection with various courses where it is pertinent, rather than as a subject of a separate course.

"The suggestion I make, therefore, is that problems of visual education be discussed or treated in any course in which they arise."

Anderson, C. J. (Dean of the School of Education, University of Wisconsin, Madison) "Some Unsolved Problems in the Development of Visual Education." *Educational Screen.* 15:73-4. March 1936.

One of the problems of visual education is how visual instruction may be presented to the teacher so that she may be able to use this technique efficiently. A separate course in visual instruction has not been offered at the University of Wisconsin because it is felt that this problem is similar to the one presented by the introduction of remedial instruction and diagnosis several years ago. Separate courses appeared necessary for learning the techniques of diagnosis, but now it is understood that this technique is a fundamental and organic part of every course in techniques of instruction and not an appendage to be presented under a separate label. The same reasoning might be followed in the development of visual-instruction techniques. If it is an appendage or merely a desirable "follow-up" feature of instructional techniques, perhaps a special course should be offered, but if it is to become an organic part of all educational procedures it should be made an indispensable part of the core courses in teacher training. Purely as a temporary procedure, however, schools of education will in all probability find it necessary to differentiate between teachers-in-service and teachers-in-training in their provisions for inducting them into this new field.

Other problems of visual instruction are the reorganization of curricula at the elementary, secondary, and college levels, the reorganization of textbooks, and the financial problem.

On the other hand, some educators feel that special training in the use of visual sensory aids must be given apart from any other course. This type of training, it is contended, may be used for any subject in the curriculum. A

general course in visual instruction may, if desired, be followed by a more specialized treatment in special methods courses for the various school subjects.

It is interesting to note that in the preface to a syllabus for a visual-education course, McClusky in 1932 had modified his recommendation to state that a separate course is needed for emphasis. It is also significant that in discussing the work offered at the University of Pittsburgh, Yeager makes the statement that "since methods courses do not place adequate emphasis on the use and care of visual-sensory aids, separate courses are necessary so that every prospective and in-service teacher will be brought in direct contact through participation and application with visual-sensory aids developed sequentially and practically applied." [19]

Merton in the article summarized below also justifies the need for a separate course.

The judgment of certain supervisors of instruction in Pennsylvania have been briefly summarized from a report by McIsaac in 1937.

Merton, Elda L. (Assistant Superintendent of Schools, Waukesha, Wisconsin) "Responsibility of Teacher-Preparation Institutions for Visual Education Courses—from the Viewpoint of the Classroom Teacher." *National Education Association Proceedings.* 1933:783-4.

The problem arises as to whether state teachers' colleges should offer a required course in visual education based on the nature and correct use of visual aids in teaching, or whether this program shall be presented incidentally in the present general methods courses in reading, languages, and the sciences.

Every teacher needs first an overview of the scope of field and knowledge of the advantages and limitations of each aid in various teaching situations. Furthermore, the teacher must take specific teaching situations and incorporate into the lesson plan the visual aids best fitted to meet them.

Teachers with training in visual-education courses have been found to use vicarious experiences in their teaching more fre-

[19] See also Ankeney, p. 389.

quently and more intelligently than teachers dependent upon the incidental training of general methods courses, since the general courses cannot present the work with sufficient emphasis to assure correct use of visual aids in actual teaching experiences. Students of visual-education courses recognize the inadequacy of verbal instruction alone in many teaching situations owing to the lack of experience or similarity of experience among any group of children. They also understand the lack of teaching possibilities in many textbook pictures and their accompanying legends, and the need for teachers to train their pupils to interpret pictures. They recognize, further, that a single picture, at best, is static. It can only show a scene as it was the moment the camera was flashed. It cannot show change, it cannot show an object from more than one angle, nor can it show more than one step in a process. A single picture is filled with abstractions of size, sound, color, odor, taste, temperature, weight, distance, depth, texture or substance, feeling, emotion, speed and motion; and frequently there are also abstractions of location, time of day or year, structure, or relationship. The student sees, also, that these abstractions and limitations of pictures must be met with clear vivid descriptions, interpretative questions, careful testing of what the child has gained from the picture, and class discussions. The teacher may turn to the rich and varied field of visual aids and select those especially designed to overcome these limitations. Each visual aid makes its own contribution to teaching situations.

So vital a factor in the successful program of the classroom teacher should not be left to incidental training. A special visual-education course, broad in scope and practical in its applications, should be part of the required training of every classroom teacher.

McIsaac, John S. (Department of Education, Geneva College, Beaver Falls, Pa.) "What the Supervisor Wants in Visual Education." *Educational Screen.* 16:151-2. May 1937.

This is a summary of a study made among supervising officials to determine what they considered to be the relative efficiency of the different sensory aids, and the extent to which special training should be provided for each in normal schools. The check lists were sent to about seventy superintendents,

principals, and supervisors of instruction in three states in the service area of the college. Some forty responses were secured, although some did not answer all questions.

The returns showed a definite majority in favor of a special course in visual instruction, rather than stress in subject matter or special methods courses. About 22 per cent were in favor of offering teacher preparation in the use of sensory aids in special methods courses and 25 per cent in content courses in the various fields. About 53 per cent were in favor of a separate course in visual education.

Supervisors indicated that a knowledge of and information concerning the visual aids was more important than techniques and skill.

Further, the questionnaires revealed that the more common sensory aids, such as maps, blackboards, and graphs are rated more important than the more technical ones usually associated with visual education.

VII. Present Offerings in Visual Education

The outlines of some courses have already been printed in educational journals. They are reprinted here for purposes of comparison.

Stracke, George A. (School of Engineering, University of Arizona, Tucson) "What is Being Taught in Courses in Visual Instruction?" *Educational Screen.* 11:204. September 1932.

As the answer to the question, "What is being taught in courses in visual instruction?" could be found only from a study of the courses themselves, each of the eighty-six institutions offering such instruction, according to the 1931 directory of the Academy of Visual Instruction, was asked for a detailed outline of its course. Replies were received from forty-four institutions. Of these, eleven stated that they had no course or department of visual instruction, or that courses were no longer being offered. Of the remaining thirty-three, some offer the work in regular sessions, others in summer sessions only, and a few in both. To determine the amount of time allotted to the course or the units of credit allowed was impossible in the majority of instances. The lower limit was fourteen one-

hour periods, while the upper limit was a division of the work into three classes, each consisting of three one-hour classes and one laboratory period per week for one semester.

Analysis of the outlines revealed a total of forty-nine topics of which eight were taught in but one course each, while two were listed in thirty courses. The thirty-three universities, colleges, and normal schools that sent outlines displayed a remarkable concurrence in emphasis on twelve topics. From 75 to 90 per cent of the institutions listed these topics, which are given here in inverse order according to frequency:

1. The philosophy and psychology of visual instruction
2. Projectors: operation, mechanics, and optics
3. Motion pictures: types, standards of evaluation—instructional, informational, auditorium or entertainment
4. Sources of visual aids
5. Lantern slides and their use
6. Stereographs and their use
7. Photographs and prints and their use
8. Exhibits
9. Organization of a city department
11. History of visual instruction
11. Field trips
12. Care, repair, and storage of materials and equipment

Seven additional topics were offered in a majority of courses. Five courses offered all nineteen of the topics. The second group consisted of:

13. Museum trips
14. Specimens
15. Models
16. Bibliography
17. Film slides
18. Blackboard materials and techniques
19. Photographic principles and practice

Ten institutions agreed on fifteen of the above nineteen topics. The remaining thirty-one topics are indicative of the diversity of opinion existing among visual-education instructors as to the value of these phases of our work. Most of the thirty-nine are offered only in one or two or, at the most, five institutions. One third or less of the courses included the following topics: visual aids in specific subjects, television, a general

discussion of types of visual aids, organization of a school department, maps, charts and graphs, teacher training, diagrams, standard equipment recommendations, photographic darkroom practice, research, classroom conditions, globes, laboratory practice in preparation of visual aids, dramatization, demonstration lessons involving use of aids, functions of a state department, posters, tests of visual aids, radio, school and community, still films, cartoons, organization of a county department, textbook illustrations, screens, school museums, puppets, classroom demonstrations and experiments, duplicating processes—mimeograph, hectograph, and the like.

Some courses which do not list a number of these topics as such may include them under more general headings. Whenever such inclusion was indicated, however, the subtopic was listed in order to make the survey as comprehensive as possible.

The importance of some topics has undoubtedly been underestimated, and an arithmetical count such as was necessary to use here is not a measure of true values. A weighted value arrived at by a consideration of the relative importance and history of the department or institution offering each topic might effect a considerable change.

All the nineteen topics included in the first two divisions, with possibly four or five of the remainder, including teacher training, research, general discussion of all types of visual aids, demonstration lessons involving use of aids, and laboratory practice in preparation of aids, constitute a good basic outline for a course of study in visual instruction.[19]

"Another Course Outline." *Educational Screen.* 9:280-1. November 1930.

The outline given below was developed by Abraham Krasker and used by him at Boston University in the course in visual education offered by the School of Education.

THE USE OF VISUAL EDUCATION MATERIALS IN TEACHING

1. Introduction: the need for guidance in the use of this visual-aid method in education.

2. The aim of the course is to prepare the teacher for the use of the available visual-aid materials that correlate with the

[19] See also Starnes, W. Gayle. *The Present Status of Teacher Training in the Use of Visual Aids.* Univ. of Kentucky, Lexington. 1937. mimeo.

subject taught. Each teacher prepares a list of the available visual aids for the teaching of a specific subject or subjects in a given grade. This material is correlated with the course of study, and methods for the use of the visual aids are discussed and practiced.

3. The history of the use of visual-aid materials in education.

4. The present status of the use of visual-aid materials.

5. Advantages and disadvantages of this new method of education.

6. A consideration of some of the problems arising from the use of visual-aid materials.

7. The criteria for the selection of available visual aids to determine their suitability for school subjects.

8. The application of these criteria in the selection of suitable visual-aid materials.

9. The use of pictures; the available pictures; the selection of pictures for the specific school subject taught; a consideration of the methods used in teaching; method of filing; practice in the use of the necessary machinery to project pictures.

10. The use of slides; the available slides; the selection of slides for the specific school subject taught; a consideration of the methods used in teaching; method of filing; practice in the use of the necessary machinery to project slides.

11. The use of film slides; the available film slides; the selection of film slides for the specific school subject taught; a consideration of the methods used in teaching; method of filing; practice in the use of the necessary machinery to project film slides.

12. The use of motion pictures; the available motion pictures; selection of motion pictures for the specific school subject taught; a consideration of the methods used in teaching; method of filing; practice in the use of the necessary machinery to project motion pictures.

13. The use of other visual aids—collections, exhibits, posters, and so on; the other visual aids available; the selection of other visual aids; a consideration of the methods used in teaching; method of filing; practice in the use of the necessary machinery to project other visual aids.

14. A consideration of the possible schemes for using motion pictures in the schools: advantages, disadvantages, specific use of each plan; *assembly plan*—for all the pupils of the school;

grade plan—for all the pupils of a given grade; *subject plan*—for all the pupils of a given subject; *class plan*—for all the pupils of a given class.

15. Comparative methods for the efficient use of motion pictures and how the method varies with the type of visual aid and with the type of motion picture: no preparation; prediscussion; discussion during projection; questions directing pupil's attention to important points; discussion after projection, and the like.

The core course offered by the State of Pennsylvania has been issued in mimeograph form for the use of instructors in the normal schools of the state. An outline of the course follows. The outline appears in another form in Emmert's article.

A Summary of the Techniques of Visual-Sensory Aids for Teachers in Service and Teachers in Training. Commonwealth of Pennsylvania. Harrisburg. 1935. 50 p. (Mimeographed). Approved by Henry Klonower, chief of the Teacher Division, C. F. Hoban, director of the State Museum, and James N. Rule, superintendent of public instruction.

Committee statement. This revised outline is the outcome of a meeting of visual-education instructors in the teacher-preparation institutions of Pennsylvania. The summary is a refinement and amplification of the one used in certain accredited colleges and universities in Pennsylvania for the past several years.

The committee responsible for the present revision developed its outline around the recommendation of the Department of Visual Instruction of the National Education Association, which it unanimously endorses. The committee feels that in addition to its many constructive features the suggested course provides for the accomplishment of two very desirable aims: (1) It will prevent duplication of effort through the centralizing of responsibility for common backgrounds, procedures, and techniques. (2) The successful completion of this mandated course insures to every teacher in training a body of knowledge, skills, and constructive procedures that if applied in schoolroom practice should contribute tremendously to a more meaningful content of curriculum units.

The committee was made up of the following persons: Leslie C. Krebs, State Teachers' College, Shippenberg; Herbert L. Spencer, University of Pittsburgh; Wilber Emmert, State Teachers' College, Indiana; L. Paul Miller, Central High School, Scranton; R. G. Walters, Grove City College, Grove City; Henry Klonower (Chairman), Chief of Teacher Division.

Outline of Course

1. Background
   Psychological justification; history of education; visual methods as used in educational systems of the past; present implications
2. Verbalism
   Examples of verbalism; how it can be corrected
3. Values of Visual-sensory Aids as Revealed by Use
   Service to agencies other than educational; service to special fields of education; service to all types of classroom teaching
4. Values of Visual-sensory Aids as Revealed by Investigations
   Specifically: the studies of Pritchett and Merton; the report for the International Congress of Educational Cinematography, 1934; the survey reported in the 1934 *Elementary Principals' Thirteenth Yearbook*; and that of E. I. Way for the United States Department of Commerce. Generalizations from these studies. Studies dealing with specific types of aids are listed for consideration
5. The Psychological Background of Visual-sensory Aids
6. Types of Visual-sensory Aids
   Classified as aids using the eye (vision)—apparatus and equipment; aids using the eye and ear; aids using the ear; aids using activity; miscellaneous aids
7. The School Journey or Field Trip
   Definition; advantages or values; definite purposes; technique
8. The Object-specimen-model
   Definition; advantages; technique; assembling; housing
9. Apparatus and Equipment
   (See Minimum Standard Equipment of Visual-Sensory Materials [Appendix C], set up by the State Visual Education Committee.)
10. Projection—Lenses, Mirrors, Screens, etc.
    Kinds; uses; sources; standards for selection

11. Still Projectors
Kinds; how to handle; types of difficulties; care; sources
12. Making Lantern Slides
Laboratory period
13. Motion-picture Projection
Silent and sound; care; use; sources
14. Still and Motion-picture Cameras
How to handle; parts of each; sources of materials
15. Pictorial Materials and Representations
Types; standards for selection; techniques of using
16. Textbook Illustration, Photograph, Print, Cut-out, Stereograph
Advantages of each; standards; techniques; sources
17. Lantern Slides
Kinds; values; technique; care; sources; standards
18. Representation Materials
Types of representation materials; values; techniques
19. Miscellaneous Aids
These include miniature sets, pageants, demonstrations, exhibits, dramatizations, booklets, etc.; values of each; standards; sources
20. Blackboard and Bulletin Board
Purposes; techniques of use
21. Radio and Radio Vision
Values; uses; equipment needed; sources of information; techniques for use. Radio vision means use of slides in class during a broadcast for illustration
22. Integrating Visual-sensory Aids
Two type lesson plans are given
23. Standard Visual-sensory Equipment
For elementary schools of less than eight rooms; for elementary schools of more than eight rooms; for junior and senior high schools (See Minimum Standard Equipment [Appendix C].)
24. Bibliography
Twenty-four references
25. Administration of a Visual-sensory Aids Program
This would include preparation of teachers, budget allocation, integrating with curriculum units, and supervision for effective use

Appendix A. Glossary of Terms Used in Projection
Appendix B. Magnification Formula and Tables
Appendix C. Minimum Standard Equipment of Visual-Sensory Materials—general visual equipment; visual equipment by subjects: art, commercial work, English,

geography (elementary, junior-high-school), health and physical education, history, Latin, mathematics, music, science (elementary, biology, physical science, secondary-grade)

Appendix D. Minimum Equipment for a Course in Techniques of Visual-Sensory Aids

[Specific references and specific student activities are listed for each unit.]

Emmert, Wilber (Instructor in Visual Education and Science, State Teachers College, Indiana, Pennsylvania) "Core Course of a Visual-Sensory Aids Program." *National Education Association Proceedings.* 1932:790-3. A report submitted to the Department of Visual Instruction of the National Education Association.

The proposed core course in visual instruction was developed by a committee appointed by the National Education Association for that purpose. The report is divided into four major parts. The first deals with the significance of the report, the second describes how the course was developed, the third gives some significant declarations, and the fourth presents the course itself.

The suggested course represents the combined judgments of the leaders of visual instruction in the United States as to "what a core course in visual-sensory aids should contain." A tentative outline of a core course was submitted to twenty-seven visual-instruction teachers in twenty-five states representing all sections of the country. Eighteen usable replies were received. In addition, a number of printed and mimeographed courses of study in visual instruction were used in this study. A tabulation of frequencies of common elements for the course was made.

Content and method in this course, as in all school subjects, are the products of an evolution through authority, opinion, speculation, and research.

A determined stand must be taken on certain questions:

The initial core course in visual instruction should be mandatory; every person in teacher training for public-school work should be required to take a laboratory course in visual-sensory aids.

The core course should contain those elements common to practically all subjects.

The core course should carry three semester hours of college credit. In the conduct of the course due consideration should

be given to (a) the philosophy and psychology of visual-sensory aids, (b) a technique for their use, and (c) skill in the use of the various visual-sensory aids.

The Department of Visual Instruction of the National Education Association is justified in an aggressive program which will see, within the next decade, a core course in visual instruction in every progressive state.

A course for directors and supervisors is in the offing, and special courses, such as visual-sensory aids in science, and so on, will be popular.

If other courses are developed, the core course should be insisted upon as a separate course before the special courses are given.

General description of the course.—"This course is based upon the philosophy that sensory experience and mental activities parallel each other in the learning process. Visual and other sensory aids, therefore, should hold a major place in the teaching of practically all subjects and on all levels of learning. To be a well-balanced course, and of the greatest value to prospective teachers and the teachers in service, it should give training in and an effective technic for the use of all types of visual-sensory aids. This course should be mandatory on the part of every person preparing to teach in the public schools. The course is designed for the preparation of teachers of the various subjects, and should contain those elements common to practically every subject."

Objectives.—1. To learn the meaning of the common terms used in visual-sensory education; to give the student a concrete and meaningful vocabulary.

2. The development of skill in selecting the suitable teaching aids from those available for the teaching of a specific subject.

3. The development of a projection technique which will assure an efficient use of all the essential projectors in classroom work.

4. To provide the prospective teacher with a body of knowledge as well as a direct acquaintance with the useful sources of information which will be helpful in the teaching of the various subjects of the curriculum.

5. To give training in the organization of the visual-sensory aids for the various subjects so that the aids may be available and usable in the classroom.

6. The development of a proper technique for the efficient use of all the teaching aids.

7. To acquaint the prospective teacher with the value of research in determining educational materials and methods.

8. To acquaint the prospective teacher with the psychological aspects underlying visual-sensory aids.

9. To acquaint the prospective teacher, or the teacher in service, with minimum standards for visual-sensory equipment and standards for evaluating the various visual-sensory aids.

Method.—The lecture-demonstration, discussion, and laboratory method will be used throughout the course. Certain phases of the work can be best presented by the instructor in lecture-demonstration form. Other phases of the work lend themselves to other methods of instruction. Projects suitable for the various grades will be worked out by the group. Emphasis will be placed upon suitable methods of presentation and ways of further stimulating the interest of the student. The student will be taught how and when to use visual and other sensory aids. Maps, specimens, objects, models, the blackboard, projectors, slides, films, field trips, and the like, will constitute the materials of the course.

Some supplementary references on the Pennsylvania core course in visual-sensory aids are as follows:

"**Course** of Study in Visual Education." *Educational Screen.* 14:135. May 1935.

An outline of the twenty-five units contained in the Pennsylvania revised course of study in visual education.

Emmert, Wilber. "Visual-Sensory Aids in Education: (Core Course) *Education.* 55:78. October 1934.

An outline of the same course with a brief history of its development. Also printed in the *International Review of Educational Cinematography.* October 1932.

"**Pennsylvania** Makes Visual Education Course Mandatory." *Educational Screen.* 13:272. December 1934.

The course next described is based on the Pennsylvania core course, but the means by which the objectives were attained are both interesting and suggestive.

Yeager, William A. (Professor of School Administration, University of Pittsburgh) "Preparing Teachers in the Use of Visual-Sensory Aids." *Educational Screen.* 15:74-6. March 1936.

A discussion of the conception of education as an adjustment to and a reliving of life experiences brings us to the problem of a more efficient method by which this educational process can be accomplished. Life can become rich and full only in so far as the environment we live in can be understood and appreciated. Since sensory experiences constitute the basis of the child's educational pattern, with visual experiences accounting for probably three-fourths of our sensory experiences, visual education, or more accurately, sensory aids, contribute greatly to the ends of education. It is unfortunate that visual education has become associated for many people with "seeing experiences" alone, when in reality it includes all sensory experiences. Some more inclusive and appropriate term should be coined to fit this thought.

The State of Pennsylvania has recognized these larger implications of educational development through sensory experience. The State Council of Education, after noting the favorable response to courses in sensory aids at teacher-preparation institutions, passed a regulation requiring "the completion of a course in visual education of all persons to whom shall be issued a permanent college certificate after September 1935." Teachers may complete this required course either as part of their preservice education, or as part of the six semester hours that must be completed subsequent to the issue of the provisional college certificate, if this certificate is to be made permanent.

At the University of Pittsburgh a course was offered during the 1935 summer session. It was held in the Frick Training School. There were forty-five teachers in service enrolled in the course, although the course was offered on an undergraduate basis. There were four one-hour classroom periods and one two-hour laboratory period weekly. During the following fall session, the course was given to juniors and seniors in the School of Education on a similar basis.

Some of the activities of the course were as follows: The problems of preparing class presentations of each type of visual-sensory aid and of constructing or developing the necessary material and applying it to given classroom situations, both on the elementary and on the secondary-school levels, were assigned to committees of from two to four persons. The cartoon committee drew cartoons, or collected them from newspapers, and demonstrated their instructional value; the puppet committee constructed all types of puppets and marionettes and wrote a play or dramatized a lesson to show their possibilities as teaching aids; the object-specimen-model committee made and collected an exhibit of each of these types; the photography committee took pictures and demonstrated the use of the camera in teaching. A school journey was made to the Carnegie Museum and Art Exhibit. All types of homemade slides were made and demonstrated. A radio in the classroom offered an opportunity for the evaluation of programs. Every member of the class was required to learn to operate three different makes of 16-mm. projectors to qualify for a license to operate nontheatrical projectors. As a final test, each student was required to apply as many as possible of the several visual-sensory aids discussed to a particular subject or to a special grade level. This activity enabled students to select the aids best adapted to their particular fields and to evaluate their possibilities in the light of the content to be included and the ends to be attained.

A visual-education exhibit marked the climax of the course. An exhibit committee took care of the arrangement of materials, but the other committees already described submitted materials to be placed on exhibition. Members of the class acted as guides to visitors during the exhibit period.

Mention should be made here of the necessity for adequate equipment for the proper conduct of the course. The course should not be offered if adequate materials and equipment are not available. Students must learn by doing.

The need for a separate course for visual instruction appears to be very urgent. Methods courses do not place adequate emphasis on the use and care of sensory aids. Separate courses are necessary so that every prospective and in-service teacher will be brought in direct contact, through participation and application, with visual-sensory aids developed sequentially and

practically applied. There should be a conscious effort to emphasize and evaluate them as educational tools.

Now that teacher-preparation institutions have accepted the challenge of the changing social order and are offering courses in visual-sensory aids, it remains the responsibility for teachers in the public schools to evaluate their offerings in the light of effective materials and methods adapted to this desired end. Perhaps administrators and supervisors themselves ought to be awakened to the possibilities of such courses, so that they may exercise leadership. In the last analysis, granting an adequate preparation, the effective functioning of these procedures depends very largely upon the personality and attitude of the teacher.

Miller describes the way in which a course was developed at Bucknell University in Lewisburg, Pennsylvania. The three summaries that follow will give a clear idea of the work being done there.

Miller, L. Paul (Director of Visual Education, Central High School, Scranton; Instructor, Bucknell University Summer School) "Teacher Training in Use of Visual Aids." *Educational Screen.* 9:234, 237. October 1930.

One method of developing a course in visual education was tried at Bucknell University during the summer of 1930. Visual aids were used in the demonstration school in actual classroom situations without changing in any way the term plan. An opaque projector, glass slides, and 16-mm. films were among the aids demonstrated. Follow-up tests, observation of the practice teachers, and school journeys were all introduced in the natural course of the lessons.

After these demonstrations, which occupied several weeks, the practice teachers, and school journeys were all introduced in the use of visual aids; (2) types of visual aids; and (3) sources of materials, particularly with reference to the subjects of major interest. The following guide was prepared in mimeograph form and filled in by students taking the course:

I. Values and Outcomes of Visual Aids. (An extensive reading list was appended and space was provided for additional references.)

II. Types of Visual Aids. (A reading list was added and space for additional references was provided for each of the topics which follow.)

III. Sources of Materials Which May be Used in My Own Teaching. (Source lists were suggested.)

At the close of the summer session, in an effort to secure more comprehensive data, a questionnaire form was sent to all institutions running summer courses.

Miller, L. Paul (Bucknell University) "Practice Teaching in the Use of Visual Aids: Bucknell Plan." *Educational Screen.* 10:241. October 1931.

Training teachers in the use of motion pictures and other visual aids by directing their use of such materials in actual high-school classrooms was one of the features of the Bucknell University Summer Session of 1931.

A completely organized high school for practice teaching is conducted there during the summer. The training teachers are heads of departments in large city school systems. Those in charge report that the stress on the use of visual aids in the demonstration school has been a very successful experiment in many ways. Demonstrations of the use of apparatus, exhibits, museums, school journeys, charts, graphs, models, dramatizations, newspaper and magazine cut-outs, stereographs, glass slides, film slides, 16-mm. silent and sound films, were given in the demonstration school in the teaching of all major subjects.

Teachers were instructed in the construction of these materials, including homemade motion pictures. A special class, in which more advanced instruction was given in the techniques of using visual aids, was conducted daily for summer-session students who were experienced teachers. In this class the use of visual materials in teaching visual education was effectively worked out. One feature of the class was a journey to Reading, Pennsylvania, to study the splendid use made of the museum by the Reading school district under Levi Mengel, pioneer in the country in the use of objective materials in actual classroom teaching.

Equipment used at Bucknell included motion-picture cameras, 16 mm. and 35 mm. projectors, glass-slide projectors, film-slide projectors and attachments, opaque projectors, daylight equipment, screens, sound projector in a local theater, homemade slide materials, sound and silent films, slides, film slides, apparatus for a laboratory course, and a comprehensive library of visual-education books, magazines, and clippings.

One project in the class for experienced teachers was the listing of visual aids for the Pennsylvania state course of study in chemistry. Another was the correlation of visual aids with the teaching of vocational guidance—a combination of two new fields. Original scenarios for educational motion pictures were also prepared. Films of pupils in the demonstration school were taken and projected in the high-school auditorium.

Miller, L. Paul (Bucknell University) "Teacher Training in Visual Instruction." *Visual Review.* 1932:15-16.

A visual-education course has been developed at Bucknell University, based on the laboratory method. The course consists of forty-five units of instruction, each unit introduced by a practical problem referring directly to actual classroom situations. Visual aids are used throughout, with a minimum of theory and maximum of practice. The materials for the instructional work are in mimeographed form. Some of the units were outlined in the *Educational Screen,* January through May, 1932. The topics were:

1. Why should I study the uses of visual and other sensory aids in education?
2. What should be the nature of a laboratory course in the use of visual and other sensory aids in education?
3. What is implied by the term "visual and other sensory aids"?
4. What are the main types of visual aids and which types can be most useful in my teaching?
5. How can visual aids be used in teaching my major subject?
6. What specific visual aids can be used in teaching my major subject?
7. What specific visual aids can be used with each unit in the teaching of my major subject?
8. What is the background of visual aids in education?
9. What values and outcomes have visual aids which can make them useful in my classes?
10. What are the principal functions of visual aids in my teaching?
11. What use can I make of science apparatus?
12. What objects, specimens, and models can I use in the classroom?
13. How can school journeys be effectively used in my subject?
14. What are the relative values of photographic prints?

15. What merits have stereographs?
16. What purposes can be served by glass slides?
17. How are glass slides made?
18. What advantages have film slides and still films and how are they used?
[20] 19. What types of "still" projectors are there?
[20] 20. How are "still" projectors used?
21. What is the place of motion pictures in education?
22. What kinds of motion-picture films are there? How can they be evaluated?
23. How are films cared for and repaired?
24. How are silent motion-picture projectors operated and constructed?
25. How are motion-picture projectors with synchronized sound constructed and operated?
26. What are the possibilities of sound pictures in classrooms?
[20] 27. How are lenses used in projection?
[20] 28. What facts about electricity are important in projection?
[20] 29. How are classrooms prepared for projection?
30. How are amateur motion-picture cameras constructed and operated? How can they be used by schools?
31. How are scenarios written?
32. How are lessons planned in which projected still or motion pictures are used?
33. Should there be places in my lesson plans for charts, graphs, diagrams, posters, and cartoons?
34. What are the possibilities of blackboard sketches and diagrams in my teaching?
35. What kinds of maps and globes are available?
36. Can pageants, tableaux, or dramatizations contribute anything to my subject?
37. Can radio programs be helpful in classrooms?
38. What principles of educational psychology are of special interest in our study of visual aids?
39. What is the minimum standard equipment for the use of visual aids in my subject?
40. Of what should teacher-training courses in the use of visual aids consist?
41. What are some current events in the visual field?
42. What are some problems of the administration of visual aids?

[20] These units have been described in detail in the articles published in the *Educational Screen*. January through May 1932.

43. What are some research problems in use of visual aids?
44. What are some future prospects of visual aids?
45. What are some important general conclusions regarding the technique of visual aids?

Some of the courses reported in magazine articles deal with certain aspects of visual instruction. For example, the course given under the direction of the Bronx Boro-wide Teachers Association of New York City is divided into two sessions. One, meeting on Tuesdays, is concerned with "Methods and Use of Visual Instruction Material"; the other, meeting on Thursdays, deals with "The Motion Picture"—both theatrical and educational. This course was reported in *Educational Screen* (14:288) for December 1935.

Another course given at the American Museum of Natural History in New York City dealt only with the mechanical aspect of visual instruction. An outline of this course appeared in *Educational Screen* of December 1930 under the title, "Teachers' Course in Mechanics of Visual Instruction."

A more complete outline of a course on the mechanical aspect of visual instruction was published by L. P. Miller in a series of articles entitled "Units of Instruction for Teachers' Training Courses." This series appeared in the *Educational Screen* (11:7, 42, 72, 108, 138), January through May 1932.

Teachers of visual instruction who plan to include a unit on the use of visual aids in geography will find "Materials for Visual Instruction in Geography," by William M. Gregory, Alfred W. Abrams, and Rupert Peters—Chapter XXIV in *The Teaching of Geography,* Thirty-second Yearbook, National Society for the Study of Education (Public School Publishing Company. Bloomington, Illinois. 1933)—one of the best in the literature. Standards are set up for satisfactory geographical pictures and suggestions are offered for the use of photographs, slides, and motion-picture films in the teaching of geography.

APPENDIX

APPENDIX

Books on the Subject of Motion Pictures and other Sensory Aids in Education

I. *General Survey of the Field*

"Aids to Teaching in the Elementary School." Thirteenth Yearbook, Department of Elementary Principals. National Education Association. 1934.

Benoit-Lévy, Jean. L'instruction visuelle aux Etats-Unis. Editions du Cinéopse. 73 Blvd. de Grenelle. Paris. 1936.

Dale, Edgar and Ramseyer, Lloyd L. Teaching with Motion Pictures: Handbook of Administrative Practice. American Council on Education. Washington, D.C. 1937.

Dent, Ellsworth C. The Audio-Visual Handbook. rev. ed. Society for Visual Education. Chicago. 1937.

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Ellis, D. C. and Thornborough, L. Motion Pictures in Education. Thomas Y. Crowell Co. New York. 1923.

George, W. H. The Cinema in School. Isaac Pitman. London. 1935.

Hoban, Charles F., Hoban, Charles F., Jr., and Zisman, Samuel B. Visualizing the Curriculum. Cordon Company. New York. 1937.

Hollis, A. P. Motion Pictures for Instruction. Houghton, Mifflin Co. Boston. 1924.

Johnson, W. H. Fundamentals of Visual Instruction. Educational Screen, Inc. Chicago. 1927.

Koon, Cline M. Motion Pictures in Education in the United States: A report compiled for the International Congress of Educational and Instructional Cinematography. University of Chicago Press. 1934.

Lauwerys, J. A. ed. Film in the School. Christopher. London. 1935.

"Materials of Instruction." Eighth Yearbook, Department of Supervisors and Directors of Instruction, National Education Association. Bureau of Publications, Teachers College, Columbia University. New York. 1935.

McClusky, F. Dean. Visual Instruction: Its Value and Needs. Mancall Co. New York. 1931.

Motion Picture in Education: Its Status and Needs. American Council on Education. Washington, D.C. 1937.

Ottley, D. C. The Cinema in Education: A Handbook for Teachers. George Routledge and Sons. London. 1935.

Visual Aids in the Schools. New York State Association of Elementary Principals, Visual Aids Division. Rollin W. Thompson. Utica, N.Y. 1935.

II. *The Sound Film in Education*

Devereux, F. L. The Educational Talking Picture. rev. ed. University of Chicago Press. Chicago. 1936.

Brunstetter, M. R. How to Use the Educational Sound Film. University of Chicago Press. Chicago. 1937.

III. *Published Research Studies in the Field*

Arnspiger, V. C. Measuring the Effectiveness of Sound Pictures as Teaching Aids. Bureau of Publications, Teachers College, Columbia University. New York. 1933.

Consitt, F. The Value of Films in History Teaching. Bell and Sons. London. 1931.

Freeman, F. N. and others. Visual Education. University of Chicago Press. Chicago. 1924.

Knowlton, D. C. and Tilton, J. W. Motion Pictures in History Teaching. Yale University Press. 1929.

The film in national life. George Allen and Unwin, Ltd. 1932.

Marchant, James, ed. The cinema in education. George Allen and Unwin, Ltd. 1925.

Rulon, P. J. Sound Motion Pictures in Science Instruction. Harvard University Press. 1933.

Sigman, J. E. The Origin and Development of Visual Education in Philadelphia Schools. Temple University. Philadelphia. 1933.

Sound films in schools. Experiment by the National Union of Teachers in the schools of Middlesex, England. Schoolmaster. 1931.

Weber, J. J. Comparative Effectiveness of Some Visual Aids in Seventh Grade Instruction. Educational Screen, Inc. Chicago. 1921.

Weber, J. J. Picture Values in Education. Educational Screen, Inc. Chicago. 1928.

Weber, J. J. Visual Aids in Education. Valparaiso University. Valparaiso, Ind. 1930.

Wood, B. D. and Freeman, F. N. Motion Pictures in the Classroom. Houghton Mifflin Co. Boston. 1929.

Westfall, L. H. Verbal Accompaniments to Educational Motion Pictures. Teachers College, Columbia University. New York. 1934.

IV. *Directories or Source Lists*

The Educational Film Catalog. H. W. Wilson Company. New York. 1936. With quarterly supplements.

Educational Screen. Chicago. Monthly.

Brown, H. E. and Bird, J. Motion Pictures and Lantern Slides for Elementary Visual Education. Teachers College, Columbia University. New York. 1931.

Koon, C. M. and Noble, A. W. National Visual Instruction Directory. American Council on Education. Washington, D.C. 1936.

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Townsend, Mary E. and Stewart, Alice G. Audio-Visual Aids for Teachers . . . H. W. Wilson Company. New York. 1937.

Woodring, Maxie N. and Harold, Gilbert. Enriched Teaching of Commercial Subjects in the High School. . . . (Enriched teaching series) Teachers College, Columbia University. New York. 1930.

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Woodring, Maxie N. and Sanford, Vera. Enriched Teaching of Mathematics in the High School. . . . (Enriched teaching series) Teachers College, Columbia University. New York. 1928.

Woodring, Maxie N. and Schwendener, Norma. Enriched Teaching of Physical Education in the High School. . . . (Enriched teaching series) Teachers College, Columbia University. New York. 1929.

Woodring, Maxie N. and others. Enriched Teaching of English in the Junior and Senior High School. . . . (Enriched teaching series) Teachers College, Columbia University. New York. 1934.

Woodring, Maxie N. and others. Enriched Teaching of Science in the High School. . . . (Enriched teaching series) Teachers College, Columbia University. New York. 1928.

V. *Theatrical Motion Pictures and Education*

Adler, Mortimer Jerome. Art and Prudence. . . . Longmans. New York. 1937.

Bardèche, Maurice and Brasillach, Robert. History of Motion Pictures. Norton. November 1937.

Barnes, Walter. The Photoplay as Literary Art. Educational and Recreational Guides, Inc. Newark, N.J. 1936.

Beman, L. T. Selected Articles on Censorship of the Theater and Moving Pictures. H. W. Wilson Company. New York. 1931.

Blumer, Herbert. Movies and Conduct. (Payne Fund Studies: Motion Pictures and Youth) Macmillan. New York. 1933.

Blumer, Herbert and Hauser, Philip M. Movies, Delinquency, and Crime. (Payne Fund Studies: Motion Pictures and Youth) Macmillan. New York. 1933.

Buchanan, Andrew. The Art of Film Production. Pitman. London. 1936. Distributed by Educational and Recreational Guides, Inc. Newark, N.J.

Charters, W. W. Motion Pictures and Youth: A Summary. (Payne Fund Studies: Motion Pictures and Youth) Macmillan. New York. 1933.

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Floherty, J. J. Moviemakers. Doubleday Doran. Garden City, N.Y. 1935.

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Frutchey, Fred P. and Dale, Edgar. Evaluation in motion picture appreciation. Ohio State Univ. 1937.

Gale, Arthur L. How to Write a Movie. Brick Row Book Shop. New York. 1936.

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Kiesling, Barrett C. Talking Pictures. Johnson Company. Richmond, Va. 1937.

Lane, Tamar. New Technique of Screen Writing: A Practical Guide to the Writing and Marketing of Photoplays. McGraw. New York. 1937.

Lewin, William. Photoplay Appreciation in American High Schools. D. Appleton-Century. New York. 1934.

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